THE BUILDER

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The Polytechnic, Regent-street, London. Mr. G. A. Mitchell, A.R.I.B.A., Architect.

Fishmongers' Hall. (*See page* 737.)

From an Etching by Mr. Francis Sydney Unwin.

THE ARCHITECTURAL SENSE.

OF those who have taken up architecture as a profession it would be interesting to know how many have been led to do so by irresistible impulse—by the conviction that it afforded the one outlet for their talents.

Rather is it among the professions that must assume at their outset a primarily business side that architecture must be placed. The career commences in an office that is, rightly enough, a very different place from a studio, and it is only in later years that the real meaning of the profession has an opportunity of developing itself. It may never do so. The student who has chosen architecture as a vocation, or who has had it chosen for him by well-meaning parents or guardians, may, while proving an excellent exponent of the business side of his profession, fail ever to "find himself"—fail, that is, to justify his devotion to it for his life-work.

If, on the other hand, there should be revealed to him an insight of the architectural sense, an appreciation of proportion, mass, form, the profession will at once be raised above a purely business career, and will place him so inspired in the domain of the arts.

How rare this is at the outset is hardly realised. Such a sense often seems to dawn by happy accident, at a mature age, and it would seem to come oftener to those who have not been concerned with architecture as a profession, but have gone to it for study and pleasure, for relaxation from their immediate business pursuits. And such men, had they the conditions of the Middle Ages

to favour them, would possibly have proved to be some of our finest architects, leaving behind them results quite worthy of ranking with the work of those who have followed the profession in the orthodox way. It is often to the man unconcerned with buildings that the perception of architectural form comes with its fullest meaning.

Circumstances, not definite choice, decide a career in the majority of cases, and an immature mind may as suddenly awaken to a literary sense in the architect's office as an architectural sense may dawn on one who has had no special training in that direction.

A great architect is the happy combination of a mind that has been trained in the medium that affords it most scope for its imagination. Long unconscious of the direction of his powers, the very realisation of this knowledge at a critical period is an impulse to genius that cannot come to one who knows it would come too late. Genius is the realisation of great things created in the mind, and a great architect must be able to do all and more than he who has had all the architectural training available. The latter indeed will often seem to achieve more than a true architect's mind if that be unrealised, unless we are able to discern in what other direction that instinct has been applied. For a genius will find material to be wrought by him—the medium wherein to express himself—in whatever path chance may have thrown him.

Even in those cases where there has been a strong underlying impulse towards the deliberate selection of architecture as a profession, it has been actuated more by the inducement held out by the hope of erecting buildings—churches and large houses—than any prompting towards the realisation of architectural forms—the ambition to shine in the highest paths of the profession rather than the aspiration to express oneself through architecture.

To aim at the "essentials of architecture" is to endeavour to find just that point which makes a building something more. There is always that moment in any creation of man when one added touch shall mean everything or nothing. And so we seek the spark that turns a sentence into a piece of literature, or the masterstroke that transposes a building into architecture.

The test of all art is a contemporary test, and cannot be referred to the past. There must be represented something compatible with the experience and accumulated intellect of the present. The past is an historical reckoning. Is it something to us?—not, was it something to them?—should be the question, as true as regards architecture as it is with literature. It is well enough to trace the development of an art from its primitive stages, from the days when it stood for great things to the minds which fashioned it, onwards to the times when such things appear grotesque and puerile. But to lapse into the archaic and the primitive for our present needs is to travel along a road that leads nowhere. Architecture, in common with any other art, must grow with the age; be as invested as any department of the human intelligence with the time spirit, and sum up the past in the present, for a vital understanding of that moment by us.

It is not by slavish copying of an ancient building that we can produce fine buildings. If so, we might all become great dramatists by copying out *Lear*. But in the great buildings of the ancient and mediæval worlds are the qualities to be grasped and interpreted in the spirit of our own age, according as there be genius sufficient to perceive and recreate those qualities in a fashion that shall be the more intense as being inspired by the accumulation of experience.

ST. PAUL'S BRIDGE AND THE CITY CORPORATION.

If any justification were needed for the contention that the City authorities were not sufficiently well informed to be competent to deal with such a question as St. Paul's Bridge it is amply provided by an article in the *City Press*. After admitting that the Corporation had so far taken no architectural advice beyond that of an eminent surveyor, the writer proceeds to tell us that the reason for this course of action is obvious. "The first step is to secure Parliamentary approval of the scheme in outline. Later on it will be time enough to invoke the aid of an architectural expert for the purpose of settling the exact formation of the structure."

That is, after the whole scheme has been hopelessly spoilt by an improper lay-out, an architect is to be called in to invest it with artistic merit by drawing the entasis of a column or a moulding for the balustrade, and by this means the just claims of architectural beauty and fitness are to be satisfied.

It really is difficult to know what to say to this. We have already been taken to task by our contemporary for endangering the *entente cordiale* by referring to second-rate French provincial towns in connexion with the City of London. We are afraid we must now take the risk of endangering the peace of Europe by saying that we doubt if it would be possible to find any third-rate European town in which such extraordinary ideas could obtain the support of a responsible and well-informed journal.

In such towns responsible people would understand that the architectural aspect includes all aspects; that beauty should be inherent in the general lay-out of such a scheme; that once started on wrong lines no amount of exquisite detail or ornament will ever set it right; that later on it will *not* be time enough to call in an architectural expert—except to tell them that it is too late and that they should have called him in before. Certainly there will be time enough for that.

In his recent letter to the *Times* the Chairman of the Bridge House Estates Committee seems to claim to have considered the matter from the architectural standpoint by courteously receiving deputations of architects and other artists, listening to and discussing their views, and then proceeding to calmly ignore them—presumably because they did not happen to agree with certain preconceived ideas and a certain line of action to which, unfortunately, the Corporation seem to have been more or less pledged, and from which it was difficult to retreat with dignity. The statement at the end of this letter seems to add further proof to the contention that the Corporation does not realise that the architectural aspect of a town planning scheme like this includes all other aspects—that the business of the architect as a skilled planner is to consider the various points of view of the engineer, the Police Commissioner, the valuer, the medical officer of health, and all others concerned, to satisfy all the practical requirements of the town, and in so doing to create a work of art. It is his daily exercise in this difficult art of reconciling conflicting interests that gives him his special skill in such matters. To decide this question from an architectural standpoint is therefore to decide it aright.

According to the *City Press*, we are very indignant with the City Corporation for flying in the face of the architects and of their supporters in the Press. All the same, we would rather they did even this than not fly at all. What distressed us was their refusal to fly, their inability to rise to a point of view from which a wider and more comprehensive outlook could be obtained. In the heat of our indignation we are supposed to have lost our sense of perspective; even so we have sufficient left to prevent us from looking upon this article as argument or as any real defence of the action of the Corporation.

The fact that Lord Claud Hamilton has withdrawn his opposition to the Bill, for the reason that it has been represented to him that "the scheme as passed by the Committee is the only one by which the tramway can be effectually carried out," shows again how little this matter has been really threshed out. As long ago as last July we published a scheme providing for the trams, to which we have never seen any objections raised. The latest suggestion by Mr. W. H. White for a Y-shaped approach shows also how many possible ways there are of dealing with the scheme in an architectural manner, none of which seem to have been thought of before.

We can only record our profound satisfaction that Parliament, as we ventured confidently to predict, has faithfully reflected the new spirit of the age and saved the reputation of London.

We congratulate the Institute, Professor Pite, and all those who have helped in the good cause on the successful result of their efforts.

ADDINGTON PALACE.

By direction of the trustees of the late Mr. F. A. English, Messrs. Douglas Young & Co. will submit for sale on July 11, at the Mart, Tokenhouse-yard, the estate known as Addington Palace, formerly one of the Archiepiscopal residences of the Archbishops of Canterbury, and rich in historical associations. The present mansion is surrounded by about 1,151 acres of park and farm land, and the whole forms one of the most notable properties near London. A few years ago the interior of the mansion was reconstructed and decorated under the superintendence of Mr. Norman Shaw. It is possible that the land may be developed on garden city lines.

NOTES.

Memorial to King Edward VII.

THE Bishop of Stepney writes to suggest that, as the provision of a central monument to King Edward VII. would cost only a small part of the money at the Committee's disposal, the remainder might be utilised for another memorial of permanent utility by converting the present derelict premises of the Shadwell Fish Market into an open space. Why does the Bishop assume that a central monument would only cost a small part of the money subscribed? We were under the impression that the great expense of acquiring and clearing an adequate site in the central part of London was one of the reasons for choosing the St. James's Park site, and also for the subsequent delay in making further suggestions. Judging from previous experience, the Committee is only too likely to be restricted in its choice by the question of cost. We have every sympathy with the Bishop's desire to see a well-laid-out open space at Shadwell. On its own merits alone this is a proposal worthy of all support, but public opinion is not likely to be satisfied with Shadwell as a position for London's monument to King Edward, and if the Committee attempts to divide its energies between two it will probably do justice to neither. It had much better do one and do it supremely well; then we shall not require another memorial of permanent utility. Why of "permanent utility"? Is not a monument of permanent utility—as a monument? We do not seem able to get rid of the feeling that a monument needs some sort of excuse that it should be made to justify its existence by being something other than a monument; by serving some useful purpose which may or may not have some relation to the idea it is designed to express.

The *Times* Critic at the Royal Academy.

IT is gratifying to find the critic of the *Times*, in his notice of the Architectural Room at the Royal Academy, referring to architecture as "the most living of all the arts of design at present." It is also interesting to notice that he lends his authority to the view that representations of architecture ought not necessarily to be works of art in themselves, and that buildings, when executed, are best represented by photographs. "Architecture," he points out, "is not a pictorial art; and a picturesque painter can misrepresent it to any extent, concealing both its virtues and its defects." To the misleading effect of so many of the drawings which make it impossible to judge the real qualities of the actual building he is inclined to attribute much of the public indifference to this exhibition. There is probably some truth in this, but it is not altogether the fault of architects, as he seems to suggest. Architects have often attempted to make the exhibition more useful to the profession and more interesting to the public, but they are not yet in a majority on the Council of the Royal Academy, and painters have their own ideas on the subject. Models they may tolerate, but photographs—never. No doubt the logical attitude would be to demand a proportion of the gallery space in accordance with the importance of the art of architecture, and liberty for architects to arrange it in their own way; failing this, to leave the exhibition severely alone—but not being more logical than other people, architects continue to drift on as they are.

"The Pushful Architect."

WE notice that an evening contemporary, in a paragraph headed "The Pushful Architect," indicating its disapproval of the agitation for the proper treatment of St. Paul's Bridge, informs us that it does not like the domination of the architect, and that it hopes the House of Commons will resolutely set its face against it. We do not think our contemporary need distress itself unduly. The danger that the architect will dominate either the public or the House of Commons in matters architectural is, we fear, by no means an immediate one. But is not this attitude just a little unreasonable? Apart from the question of any possible advantage to the architectural profession—the possibility of which appears to disquiet the writer—every profession seems to owe a duty to the State where its expert knowledge is concerned. This duty the Institute endeavoured to perform. It could have done no less. Where, for instance, the public health is concerned, the medical profession has a right—or rather a duty—to put forward its opinion, and, if necessary, to protest. If it did not, our contemporary, in the plentitude of its zeal for the public welfare, would probably be the very first to call attention to such a grave dereliction of duty. If only it understood a little more of the real nature and importance of this question it would, no doubt, adopt the same attitude here. Our contemporary also complains that a satisfactory scheme will cost more money, which the "City unaided will have to find," and asks, "Why should it?" The City "unaided" accepts the dignity, the credit, and the influence attached to its exalted position and its historic past; "unaided" it reaps the benefits, advantages, and profits of the same; but when it comes to carrying out "unaided" the responsibilities and obligations of its position—that, we suppose, is another matter. As the writer asks, "Why should it?"

Gidea Park Houses.

"A WOMAN HOUSEHOLDER" writes from Letchworth to the daily Press to ask whether the jury which judged the houses at Gidea Park was composed entirely of men. If so, she contends that the "verdict is of lessened value." Not necessarily so, we venture to say. An architect who is competent to judge house designs may know—and quite frequently does know—as much about them as any woman who lives in and administers them when built, just as he knows the requirements of any other class of building to which he has given special attention. All the same, there is something to be said for the point of view that those who occupy or use a building should have a voice in its selection. This system is adopted with success in competitions on the Continent, where the jury of technical experts is frequently strengthened by the addition of laymen with personal experience of the administration and practical working of the particular class of building to be erected, and we see no reason why it should not be equally successful in this country. When, however, "A Woman Householder" contends that until women take up the profession of architecture and co-operate with men the perfect house will remain a thing of the future, we hesitate to agree. After all, most men—even architects—live in houses of one sort or another, and some of them get to know quite a lot about their practical working. The tendency which "A Woman Householder" deplores in some of the houses in the garden cities to sacrifice internal comfort and convenience to external effect—picturesque or otherwise—is not the outcome of ignorance of their arrangements, but of original sin. It is not, however, a sin peculiar to house designers or confined to garden cities alone; it may be seen, we regretfully admit, in every class of building. If we dared to express our real conviction we should be tempted to say that women would be likely to show just as much original sin as men when it came to designing houses for other women to live in—judging by the costumes some of them design for others to wear. The mere idea of this theory applied to every other class of building, with the vision it conjures up of all those responsible for their administration and practical working taking up the profession of architecture to show us how to do it, convinces us that this engaging idea also is likely to remain a thing of the future.

Fishmongers' Hall.

FISHMONGERS' HALL, where the annual dinner of the Royal Institute of British Architects will be held on July 4, is an imposing and fortunately-situated building overlooking the Thames at London Bridge. The third structure erected by the Worshipful Company, it dates from 1830, when the adjacent bridge was built, and was the work of Henry Roberts, who died in 1876. The river front, with its balustraded terrace and Grecian-Ionic hexastyle and pediment, is no less a pleasing feature than the entrance front, with its sculptured coat-of-arms and appropriate bas-reliefs of sea-horses. At the top of the broad staircase is the noble apartment which is so fitting a place for a gathering of architects and artists. A portrait of Queen Victoria faces the minstrel gallery, and around the room, between the Corinthian pilasters, hang shields emblazoned with the armorial bearings of past Prime Wardens. Many Lord Mayors have belonged to the Company, among them being Sir William Walworth, who, in 1381, slew Wat Tyler in the presence of Richard II. One of the best-remembered Fishmongers was Thomas Doggett, the comedian, for whose prizes a sculling race takes place every year on the Thames from London Bridge to Chelsea. Our illustration (p. 735), from an etching by Mr. F. S. Unwin, shows

Fishmongers' Hall in its normal condition, not as it is now, half covered with Coronation timber. The Wren spire, behind Adelaide Buildings, on the other side of the bridge, is that of the Church of St. Magnus the Martyr, Lower Thames-street.

THE ANNUAL ELECTIONS.

AT the business general meeting of Monday, the 12th inst., the officers, Council, and Standing Committees for the ensuing session were declared duly elected, in accordance with the scrutineers' reports, as follows :—

The Council.

President.—Leonard Stokes.

Past-Presidents.—T. E. Collcutt; Ernest George, A.R.A.

Vice-Presidents. — Reginald Blomfield, A.R.A.; E. Guy Dawber; Ernest Newton, A.R.A.; J. W. Simpson.

Hon. Secretary.—H. T. Hare.

Members of Council.—W. H. Brierley; Walter Cave; Max Clarke; William Flockhart; J. Sivewright Gibson; J. Alfred Gotch; W. Curtis Green; E. T. Hall; George Hubbard; Arthur Keen; H. V. Lanchester; E. L. Lutyens; G. H. Fellowes Prynne; Halsey R. Ricardo; Sir A. Brumwell Thomas; E. W. Wimperis; William Woodward; P. Scott Worthington.

Associate Members of Council.—S. K. Greenslade; W. J. Tapper; H. Inigo Triggs; H. W. Wills; A. Needham Wilson; Septimus Warwick.

Representatives of Allied Societies.—H. C. Charlewood (Northern Architectural Association); S. D. Kitson (Leeds and Yorks Architectural Society); Edgar Wood (Manchester Society of Architects); James Jerman (Devon and Exeter Architectural Society); J. B. Mitchell-Withers (Sheffield Society of Architects and Surveyors); A. E. Murray (Royal Institute of the Architects of Ireland); W. F. Wilkie (Dundee Institute of Architecture); C. Locke Wilson (Cardiff, South Wales, and Monmouthshire Architects' Society); J. F. Wood (Bristol Society of Architects).

Representative of the Architectural Association.—Gerald C. Horsley.

Auditors.—John Hudson; William Henry Burt.

The Standing Committees.

Art.—Fellows: C. C. Brewer; W. H. Brierley; Walter Cave; W. Flockhart; W. A. Forsyth; G. C. Horsley; T. G. Lucas; E. L. Lutyens; Ernest Newton; E. A. Rickards.—*Associates:* S. K. Greenslade; J. J. Joass; W. J. Tapper; H. Inigo Triggs; Septimus Warwick; A. Needham Wilson.

Literature.—Fellows: F. T. Baggallay; J. Alfred Gotch; W. Curtis Green; D. B. Niven; G. H. Fellowes Prynne; Halsey Ricardo; C. S. Spooner; Sir A. Brumwell Thomas; E. P. Warren; P. L. Waterhouse.—*Associates:* W. Millard; H. Passmore; C. E. Sayer; C. Wontner Smith; A. J. Stratton; H. W. Wills.

Practice.—Fellows: R. S. Ayling; H. Chatfeild Clarke; A. W. S. Cross; Matt. Garbutt; A. W. Moore; C. S. Peach; S. Perks; H. D. Searles-Wood; H. Tanner, jun.; William Woodward.—*Associates:* K. Gammell; J. N. Horsfield; C. E. Hutchinson; H. H. Langston; H. Shepherd; H. A. Woodington.

Science.—Fellows: H. P. Adams; Max Clarke; F. R. Farrow; Ernest Flint; Horace Gilbert; G. Hornblower; G. Hubbard; John Murray; R. Elsey Smith; W. H. White.—*Associates:* G. L. Elkington; C. J. Marshall; A. E. Munby; D. L. Solomon; E. W. M. Wonnacott; E. A. Young.

The usual fortnightly meeting of the Institute was held on Monday at No. 9, Conduit-street, Mr. Guy Dawber in the chair.

BUILDING METHODS IN EGYPT.

Mr. Ernest Richmond, Licentiate R.I.B.A., read a paper on "Building Methods in Egypt," of which the following is an abstract :—

"Disorder, dilapidation, and neglect seem, at first sight, to be the prevailing and, indeed, almost the sole characteristics, at least of the lower Egyptian towns. The buildings look as if they were never repaired, and many of them as if any attempt at repair, short of complete reconstruction, would be out of the question. The dilapidated appearance of an Egyptian house is to be attributed to a large extent to the condition of the surface rendering of the walls. The surface rendering is an important feature in Egyptian building.

Buildings in Egypt stand in conditions with which it would probably be difficult to find a parallel elsewhere. During the flood season their foundations are in water or in mud, and, after the Nile has fallen, on hard-caked clay. The ground forming the bed upon which foundations rest changes, then, materially in character twice every year. Such changes do not take place without some effect upon the foundations, and, consequently, upon the superstructures of buildings.

The annual recurring changes in the nature of the soil are not, however, the only changes to which the buildings are subjected. There is an extensive range of temperature, not only between winter and summer, but between night and day. Further, the atmosphere of Egypt is remarkable for its dryness. The effect of rapid and frequent rises and falls of temperature is very marked.

No particular attention has, then, in the past been paid by Egyptians to the varying levels of the subsoil water as a determining factor in the problem of choosing a foundation bed for buildings. The practice has rather been, and still is, to regard the character of the soil, rather than the level of the subsoil water, and to build, if possible, on the black alluvium, if not upon "made" earth compacted by time, or, as in ancient Egypt, probably by ramming and watering.

The original building material in Egypt was without doubt mud brick. This material is still used to a very large extent; and although for important work it has been replaced by stone and burnt brick, yet the traditional conception of walling derived from mud-brick construction has remained, throughout history, inherent in the Egyptian builder, and it is possible to detect through all Egyptian work—ancient, mediæval, and modern—the dominating presence of those ideas which originated from mud-brick construction.

In native practice the materials most generally used throughout Egypt are burnt brick and mud brick. Rubble stone is also employed, but not to the same extent. This material is used principally in Cairo and Alexandria owing to the existence near these towns of conveniently-situated quarries.

The tendency of an Egyptian mason, if left to himself, when using rubble stone is to break it into small pieces approaching the size of bricks. The native burnt brick is usually very rough; it is made of a mixture of mud and chopped straw cast in moulds, then built into clamps and burnt. The just proportion of width to length, necessary for bonding purposes, is not considered or aimed at; nor is much attention paid to burning the bricks evenly.

In demolishing Egyptian buildings it is found that the mortar in the heart of the walls is almost all turned to dust, unless, of course, gypsum has been used, but this is very rare owing to the expense. To build a 9-in. wall with such materials, and on such a soil, would be out of the question; and a 14-in. wall would be somewhat risky. The Egyptian builder does not attempt to do either; he builds a thick wall, rarely, if ever, less than half a metre thick.

If rubble stone is used the masons work in pairs, one man on one side of the wall and his colleague on the other. Except that each proceeds at more or less the same pace, there is little connexion between their work. There is no thorough bond. Practically two thin walls are constructed independently, and the space in between is filled with smaller stones and large masses of mortar. The mortar, if it is of mud, kosremil, and fat lime, and if it keeps fairly damp, hardens rathen than sets. On the hardening of the mortar, more especially on the outside of the joints, does the stability of the wall to a large extent depend; and, in order to fortify the outer joints and to render them as capable as possible of fulfilling their function of small retaining walls, to any inferior mortar which may have turned to powder instead of hardening, it is a common custom to bed in the surface joints small pieces of stone. When fat lime and sand mortar is used the same practice is often followed, for it is recognised that this mortar sets only on the face, so that the face joint assumes a structural importance which it does not possess when a mortar capable of setting in the heart of the wall is used. If the wall is constructed of brick hardly any more attention is paid to bond than in the case of a rubble-stone wall. The same mortars are used as those already described, the object of their use being solely to provide beds on which to place successive courses of brick. A more or less systematic appearance of bond is given to the face of a wall, but the application of the principle is not extended to the interior. Each course is constructed by laying bricks side by side about one centimetre apart; the vertical joints between the bricks are purposely left open; such as are not left open are only accidentally filled during the process of laying the horizontal beds. Native-built brick walls, like those in rubble, are rarely, if ever, less than half a metre in thickness. Walls, whether of brick or rubble, and standing upon a foundation bed liable to frequent movements, would, of course, soon collapse unless the entire absence of bond in the masonry itself were not by some means supplemented. The bond necessary for giving some degree of stability is provided by means of horizontal pieces of timber placed over and under all openings and forming lintels and sills. Ranges of these timbers are carried round the building, and similar ranges are bedded in the walls at the levels of floors and roofs, where they form plates to receive the joints; and other timbers are placed, apparently promiscuously, in any position independent of opening or levels of floors and roofs. The amount of timber judged necessary depends on the nature of the land built upon, more being used in buildings upon "made" soil, or in soil with an admixture of sand, than in those constructed on the black alluvium.

The surface of the wall is, when finished, provided with a rendering very generally composed of fat lime and sand. The object in view is not only to improve the appearance of the building, but to fulfil a structural need, that of protecting the outer joints of the masonry from the destructive influence of the sun and wind. The joints would, in the absence of the protective rendering, become cracked and gradually destroyed, or, as the native builder sometimes expresses it, the sun would "burn" the joints, and so prepare for the gradual collapse of the building owing to the escape of the dried and crumbled mortar in the interior of its walls, unless built so phenomenally thick as to be disproportioned to an ordinary building.

The main characteristics of a wall, such as that described, appear to be its elasticity and the capacity it possesses to adapt itself, in a certain measure, to movements, both those in the foundation bed caused by the rise and fall of the subsoil water, and those in the superstructure itself, caused by stresses set up by changes of temperature. The function of the timbers is to assist the bond; under opening they resist shearing stresses, acting as sills, and taking up the effects of unequal pressures which, without them, would in these positions be apt to cause cracks. In the case of a threatened settlement in the foundation bed, or in the masonry itself, between any two points in a length of wall, their action tends to be that of beams; and, in the case of a threatened corner settlement, that of cantilevers; in both cases they help to transmit pressures to more solid portions of walling or foundation bed, and thus provide to some extent for the gradual automatic adjustment

and distribution of pressures. In the best examples sufficient success is obtained to preclude any danger of sudden collapse. But the success does not extend to producing a building, which will not, fairly soon after completion, begin to show signs of dilapidation, more especially in the case of houses in Lower Egypt. Small cracks will occur; the rendering will begin to fall from the loosely-built walls, especially in houses of two stories or more, and from the face of the timbers which have been inserted to provide bond. Doors and windows will perhaps jam in their frames owing to slight masonry settlements; the walls to a height of about a metre above ground level will lose their rendering owing to the evaporation of the damp, which, in the absence of any damp-proof course, has risen by capillary attraction in the wall, causing crystallisation at the surface of the wall of the salts contained in the materials of which it is built.

It is not to be wondered at that the changed conditions introduced by an increased inflow of foreigners have brought about some modifications to native Egyptian structural methods. The defects of the ordinary Egyptian-built house being fairly obvious, it is not, of course, difficult to propose remedies. A more stable wall is needed; bond and imported hydraulic lime are therefore indicated. A drier wall could be ensured by the use of a damp-proof course of imported asphalt or bituminous sheeting. The foundation bed can be consolidated by various methods so as to reduce to a minimum the effects of the subsoil water level changes; or the foundations can be made of a rigid character capable of resisting the effects of movements. Imported steel joists can be used to replace wooden lintels over openings and wooden floors and roofs. Wooden beams built into the walls for bonding purposes can be omitted. By these means a more solid, a healthier, and a more fire-resisting building can be erected. Such changes as these indicate the general effect of European influence on building in Egypt.

Up till a few years ago it was a common practice to excavate the whole of the area to be covered by a building and to lay down a thick raft of concrete. The concrete was laid in layers and well rammed and watered. The ground was flooded before the concrete was laid, in order that any weak spots might show themselves. The raft of concrete has of late years been largely replaced by concrete piles. Holes about seventy-five centimetres across are punched in the ground by means of pointed weights dropped from a height. This results not only in forming a hollow shaft in the ground into which the concrete to form the pile is rammed, but also in compressing the whole of the area built over, and so in compacting the soil to a very marked extent. The ramming of the concrete into these hollow shafts causes the weight of the building to be distributed laterally as well as vertically. The tops of the concrete piles, which are spaced about 3 metres apart, are connected by beams in reinforced concrete, and on these beams the walls are raised. This method has given, on the whole, satisfactory results. Broad-spreading foundations of reinforced concrete have also given good results. How far time will confirm the wisdom of choosing such methods of construction is a matter for conjecture and speculation. In view, however, of the local difficulties in getting trustworthy workmanship, it is difficult, as yet, to look with complete confidence on a system such as the reinforced concrete system, which depends to so great an extent on workmanship. Experience in Egypt has, however, brought, so far as I am aware, no evidence against its use either in foundations or as a means of constructing the beams which connect the head of concrete piles as just described. But it is clear that such a system should not be employed unless very special precautions in respect of supervision are taken. The desire to improve upon the loosely-built and unsatisfactory native wall has brought about the use of mortars in which cements or imported hydraulic limes form the chief ingredients. Steel-frame buildings are even beginning to make their appearance in Egypt, though it is too early to say with what result. Methods such as these have produced, in Cairo and Alexandria, a large number of buildings suitable for modern requirements.

While it is very desirable, for reasons already given, to build with more rigidity than is possible by employing purely native methods and materials, it has been found that it is not always easy to determine the degree of rigidity which must not be exceeded. Almost as great inconvenience may, in certain circumstances, be caused by too rigidly building a wall or roof as by one which is too loosely put together.

In Egypt there is, as yet, no established tradition capable of providing a suitable and complete guide when building for the fulfilment of modern needs. It is not, then, surprising that European builders have met with some experiences neither happy nor expected. The problem before them is of a two-fold nature. How, on the one hand, to build so as to fulfil modern requirements in regard to stability, fire-resistance, health, maintenance, and repair; and, on the other, to keep within the limits imposed by local physical or climatic conditions. To find the middle way, and to make a satisfactory harmony between local conditions and requirements of foreign origin, must be an object of the architect, as well as of other workers in Egypt. Something may be learnt from a study of native practice; but, owing to the great differences in the manner of life followed by the inhabitants of houses built in accordance with that practice and that followed by most Europeans, such a study will not take us very far. Even the most careful and sympathetic examination of native methods will not do much more than provide an explanation as to why buildings, which present every sign of decay and dilapidation, do not collapse more often."

Mr. R. Weir Schultz,
in moving a vote of thanks to the author, said it seemed only the other day, although it was years ago, that they were congratulating Mr. Richmond on the chance of going to Egypt and working with Mr. Somers Clarke in his investigations on some of the Coptic monuments. After that Mr. Richmond went to the department for the repair of the mosques, where they worked more than anywhere else in the old traditions of the country. Later on he went to the War Office, where he had the opportunity of dealing with important buildings for barrack purposes, and then the Department for Public Works, knowing a good man, secured his services, and he was now Director of Public Buildings in Egypt. When he was in Egypt a few years ago he saw a number of works which had been under Mr. Richmond's direction, and in every case they were direct, straightforward, suitable buildings for the purposes for which they were intended, and so far as possible local conditions had been utilised. There was no attempt made to copy forms which were of no use, or to imitate old patterns which would be out of place. It was a pity Mr. Richmond had not shown them some of the modern buildings with which he was connected. Of course, one of the great difficulties was the putting up of buildings for Europeans with native workmen, who did not understand the conditions under which Europeans lived. He would also have liked to have heard something more about the details of the craftsmanship of the woodwork and the beautiful plaster windows which they still made in Egypt. Craftsmanship in Egypt was very much alive, and tradition still remained. There was a movement for technical instruction in Egypt some time ago, and he rather regretted that they had not found a Director in Egypt who would have perpetuated the traditions. However, a very able man went out from this country, who was imbued with European ideas, and he took out a number of models which had been made in a technical school in London. The climate proved too much for them, and they fell to pieces. There was an excellent Arab museum in Cairo full of the most beautiful examples of Arab craftsmanship.

Professor Flinders Petrie,
in seconding the motion, said the paper explained in many ways ancient methods, and also showed how the necessities of modern times had, on the whole, been successfully met. It had to be remembered that they had to deal with native workmen, and with many who were unable to use a plan. The paper was also interesting in showing the contact of the Eastern and Western methods, and how necessary it was to understand the reason of a thing before they attempted to deal with it. He had passed a good deal of his life in mud-huts in Egypt, and had observed something of the nature of the materials used. With regard to the point raised of the better appearance of the towns of Upper Egypt, that ought not, he thought, to be attributed solely to the climate. The population of Lower Egypt was almost entirely Arab, while in Upper Egypt it was largely Coptic, and they would find a difference in every way in the appearance of a Coptic and a Mahommedan town. As to desert sites, he remembered an attempt at house building on a desert site near Cairo, but they did not observe a watercourse coming down from the mountains 20 yds. away, and before long the water came and swept right through the houses; so that they had to look to the surroundings, as well as to the foundations, and that was the mud facing, which was the greater part of the strength of a wall. If they built a mud-brick wall it rocked, and the only way to prevent it was by mud facing on both sides. The mud facing was made of large grains of sand with just enough mud to fill up the interstices. A great deal of trouble was taken in getting this mud mortar right. The builder made his mud of sand and spread out a sample in the sun to dry, and he put sand in until it showed no sign of cracking. He had seen a plaster wall of the kind stand hours of driving rain, followed by the hot sun, which would dry it within half an hour, and nothing happened, because it simply consisted of sand grains in contact. Elasticity of walling had been referred to, and the ancient Egyptians went in for curious methods. They had corrugated walls for getting over the difficulty of contraction and expansion—the wall could get a little flatter or a little more curved according as the foundations gave. Another point was that the Egyptians always built with a parabolic arch, and in that way avoided increasing the crushing strain. The use of timber in walls in Egypt was a very ancient custom, and he had found it used in buildings going back before the Pyramids. They suffered a good deal in the country from white ants, and he was astonished that they were able to use as much timber as they did. He had known a whole village in Upper Egypt deserted owing to the walls being completely riddled with white ants. Reference had been made to the great nuisance of salt, which always rose to the surface owing to the continuous evaporation. He suggested whether it would not be possible to put damp-courses on the face of the wall, so that the salt could not get to it.

Mr. Somers Clarke
said that a great many things which they considered so suitable in this country were by no means suitable when transported to Egypt. Mr. Richmond had not referred to the alterations made in the mass of walls by dryness, which came on rather slowly. The native thought that two years should be allowed for the drying of an ordinary 75-centimetre mud-brick wall, but it was quite evident that movement went on long after two years. If they had a length of wall, with five or six windows at intervals of 8 ft. or 10 ft., there was sure to come a vertical crack over the crown of each window. At first sight it looked dangerous, but as a matter of fact he believed it was its safety. Mr. Richmond said the Ancient Egyptians were somewhat negligent of foundations, and rather implied that they were so all through time, but he could not agree with him there. In the time of the XXVIth Dynasty, when Greek influence came in, they began to make very respectable foundations, and in some buildings there was certainly a good deal more stone underneath the building than in the structure. In some cases there were six or seven courses of masonry.

Mr. Phené Spiers
remarked that the paper of Mr. Richmond bore out to a large extent the conclusions to which M. Choisy had arrived. He congratulated the Egyptian Government that care was now taken of the ancient buildings, which years ago were left to take care of themselves. A striking example of this occurred to himself. He was sketching from the top of a mosque, and one day when he went there he was told he could not go to the top. He,

however, managed to get in. The following day he went again, expecting to be refused, but he was allowed to go on. When, however, he tried to go to the top, he found that about 10 ft. of the staircase had been broken down to prevent him.

The motion was carried.

Mr. Richmond,

in reply, said Professor Petrie had made some very interesting observations as to the desirability of having surface vertical damp-proof courses. They had tried it in several buildings, and so far as their experience went it had been a success. They put a layer of bituminous sheeting against the wall, and against that a half-brick wall in cement, both inside and outside. He did not say the Egyptians made no foundations, but simply that they did not go down to the level of permanent saturation, which would appear to give the best chance of solidity. But, of course, it was ridiculous to criticise the foundations of ancient Egyptian buildings, because they had been standing for thousands of years.

ROME ARCHITECTURAL CONGRESS.

M. Cannizzaro,

Hon. Corresponding Member for Italy, called attention to the Congress of Architects which is to be held in Rome from October 2 to October 10 in connexion with a series of Congresses arranged to celebrate the jubilee of the Unification of Italy. He expressed the hope that a large number of English architects would come. After the Congress the visitors would visit Venice to see the completion of the tower of St. Mark.

The Chairman announced that the next meeting will be held on June 26, when the Royal Gold Medal will be presented to Dr. Dörpfeld, and Mr. Lawrence Weaver will read a paper on "The Interleaved Heirloom Copy of the Parentalia, and some Notes on the Wrens." There will be an exhibition of photographs of Wren's work.

A DECEASED SURVEYOR'S ESTATE.

The estate of the late Mr. Elias Pitts Squarey, of the Moot, Downton, near Salisbury, land agent and surveyor, a co-founder and past-President of the Surveyors' Institution, who died on February 25, aged eighty-seven years, is valued at 33,365*l.* gross, with net personalty 26,723*l.*

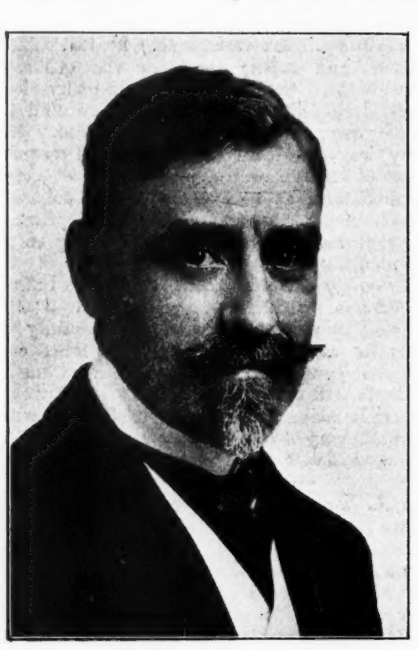
WINCHESTER CATHEDRAL.

After considering schemes for dealing with the south side of the nave of Winchester Cathedral the Dean and Chapter have approved a design by Mr. T. G. Jackson, R.A., for a double flying buttress. The buttress, which will terminate in a pinnacle in the Perpendicular style on the lines of Wykeham's pinnacles on the north side of the nave, will be placed at a distance of 6 ft. 6 in. from the main wall, and at half its height there will be a perpendicular arch from buttress to wall.

CONTEMPORARY ARCHITECTS AND THEIR WORK:

MR. E. L. MASQUERAY, NEW YORK AND ST. PAUL.

MR. EMMANUEL LOUIS MASQUERAY was born at Dieppe, Normandy, in the year 1862. A few years later his family moved to Rouen, where he received his first impressions of the beautiful in architecture from such masterpieces as the Cathedral, St. Ouen, St. Maclou, the Palais de Justice, Hôtel de Ville, and the numerous other fine things with which the ancient capital of the Normans



Mr. E. L. Masqueray.

(Photo by J. C. Strauss, St. Louis.)

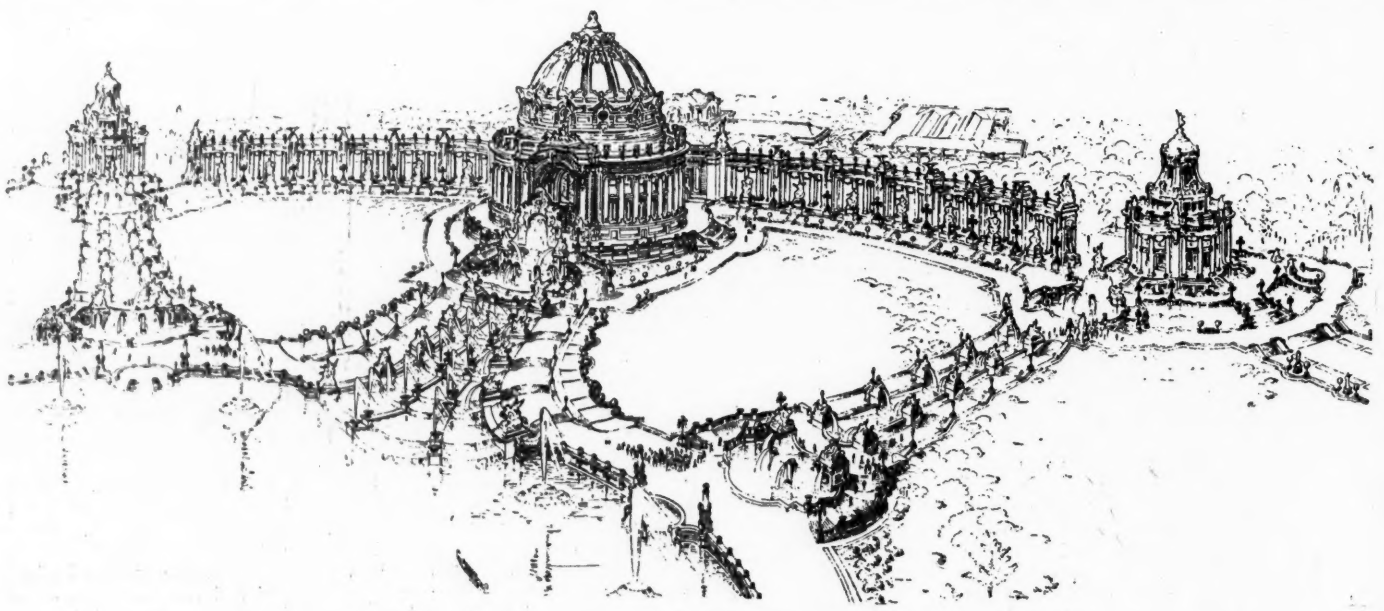
abounds. From Rouen Masqueray was taken to Paris when twelve years of age, and four years later entered as a pupil at the Ecole des Beaux-Arts. At first he studied under Charles Loisne, but later, when Mr. Loisne retired from active work, he became a pupil of Léon Ginain, the architect of the fine library of the Ecole de Médecine in Paris. Loisne and Ginain were men of radically different temperaments and views. Loisne loved the picturesque—the mediæval and Early Renaissance, the light, the delicate, the ornate. Ginain, on the other hand, adored the classic—the orderly, dignified, serious, magnificent breadth, grandeur. The tendency of Ginain's criticism, being against his earliest associations and previously received instruction, led Masqueray to strike out along independent lines and to search modern problems which presented a field for his own genius. But the influence of both masters has remained with him, and becomes more or less apparent in all his executed work. The first stimulated a naturally vivid imagination, the second calmed and dignified it.

As a student Masqueray quickly made a reputation among his young comrades at the Ecole, and is still remembered in Paris as a brilliant artist who ought to have taken the Grand Prix de Rome. But the great prize did not dazzle him nor induce him to remain at the school longer than he thought was necessary. At the age of eighteen years he received from the Académie des Beaux-Arts the Prix Deschaume, and a year later the Prix Chaudesaigues. This latter prize enabled him to travel and study in Italy. The Italian architecture of the Renaissance aroused his enthusiasm, and he set to work measuring and drawing such examples as the then little known Castle of Urbino, the drawings of which gained him a medal of the first class at the Salon of 1883.

In the succeeding Salons of 1884 and 1885 he exhibited some remarkably fine drawings of the tomb of Cardinal Phocas in the Church of Santa Maria del Popolo at Rome, and the Château de Rambures in Picardy. The latter structure, which was commenced in the XIth century, but not completed until the XVth, is considered one of the most complete examples of the military architecture of the Middle Ages. It lies between Longpré and Le Treport. The drawings were purchased by the Minister of Fine Arts for the Commission des Monuments Historiques. His restorations of the Palais de la Cour des Aides at Rouen and drawings of Amiens Cathedral, exhibited at a later Salon, led to his appointment to the Commission des Monuments.

A desire to see America induced him to accept an invitation from friends in New York to go to the American metropolis. He at first became an assistant in the office of the then budding firm of Carrère & Hastings, and later accepted a position with Richard Morris Hunt, to whom he became chief assistant. Hunt took a great interest in his young French assistant, and it is said that the surest way to disturb Hunt's temper and conduce a flow of excessive language was to intimate anything against Masqueray or his work. Needless to say, Masqueray's talent influenced much of Hunt's last and best executed designs.

After Hunt's death Masqueray remained with his son Richard Howland Hunt for a few years, and then joined Messrs. Warren



St. Louis Exposition, 1903-4: Central Feature, Colonnade of States, Cascades, etc.

Mr. E. L. Masqueray, Architect. Festival Hall by Mr. Cass Gilbert.

& Wetmore, with whom he worked until his appointment as Chief of Design, in 1901, of the Louisiana Purchase Exposition.

While acting as assistant to Hunt Masqueray's patience became exhausted with the types of assistants which he was able to procure—the products of office training only or of the American colleges. He resolved to establish an atelier in which to train young men on the lines of the Ecole des Beaux-Arts. The idea was warmly approved by Hunt, who had once himself essayed the task in a very restricted sense. (Hunt had confined his atelier to the instruction of his own assistants—Post, Ware, Van Brunt, and others—after office hours.) It was furthered by Mr. John M. Carrère, a former *camarade* of Masqueray in the Atelier Ginain at Paris, who undertook the organisation of the Society of Beaux-Arts Architects—an *alumnus* of the French School—and of other ateliers to create inter-atelier emulation and establish the French system of training by means of competitions. To Mr. Masqueray, therefore, is due the credit of founding, in the year 1893, the modern system of architectural training which is practically universal throughout the United States.

The competitions of the Society of Beaux-Arts Architects are participated in by the pupils of all the leading Universities who are also members of "ateliers." The winners of the Society's "Paris Prize" are admitted to the first class in the Ecole des Beaux-Arts at Paris, where they rival the strongest French students, and it is not too much to predict that in the course of a few years the American training, founded on the lines laid down by Mr. Masqueray, will equal that of France itself.

As patron of the atelier which bore his name, Mr. Masqueray speedily attracted the attention of the architects and draughtsmen throughout the United States, due to the extraordinary success of his pupils in the competitions of the then newly-founded Society of Beaux-Arts Architects. In New York especially it was observed that he had the faculty for finding and developing quickly every particle of artistic talent which a pupil possessed. Draughtsmen and pupils of a New York university discovered that his influence led to rapid improvement in the character of their work, and these soon filled and overcrowded the atelier at 123, East Twenty-Third-street. In 1894 or 1895 he found it necessary to require of applicants a preliminary test or admission examination in architectural design, and the application of the "Orders" to eliminate the least desirable aspirants and keep up the standard of work. This was an important innovation in architectural education in America. It was the first instance of the application of the theory that some young men ought to be told that architecture offers no hope of success for abilities such as they possess. Education in architecture has progressed in the United States by leaps and bounds since those days, but an anecdote will evince the popular understanding of the subject at that time.

Among the aspirants for instruction in Mr. Masqueray's atelier were a number of ladies, and for a time he considered establishing a separate studio for their benefit. One of these desired to be taught architecture during her summer vacation and, upon being told that two months was not sufficient for a proper architectural education, responded. "Oh, I only want to know just a little about Greek, English Gothic, and the Puff and Powder Styles—just enough to teach!"

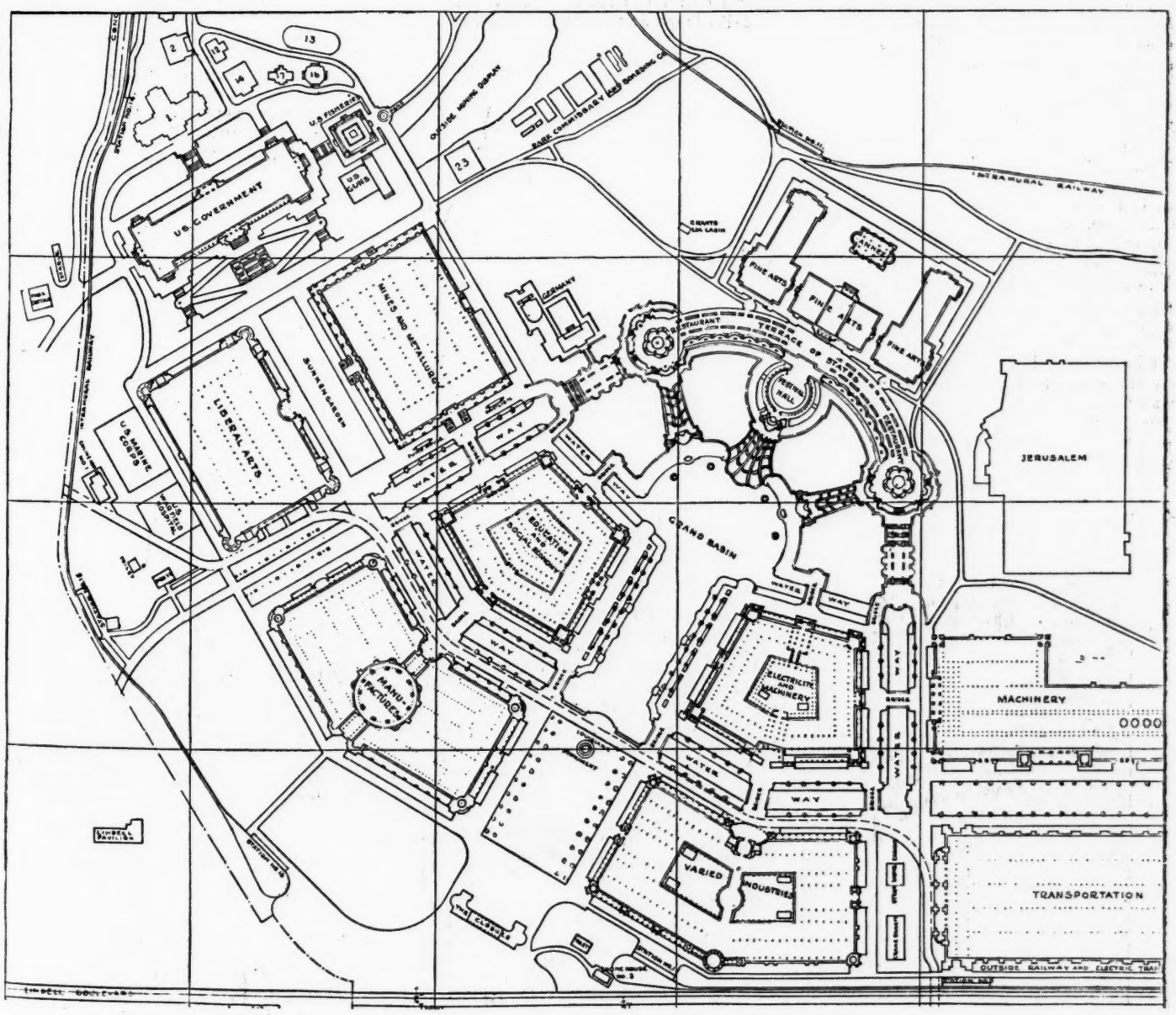
Arrived in St. Louis (his atelier in New York, having been organised as a self-governing institution, found another acceptable professor in Mr. Hornbostel, and continued as he left it) he appointed to the staff of designers only two of his own pupils—Swales and Nagle—drew two from Paris—Champney and Levy; one from Boston—La Beaume; and two from the office of Carrère & Hastings—Karcher and Sharpley; and with these assistants he designed nearly half the work at the Exposition.

St. Louis was not exactly congenial to the man who had spent his life in the delightful art-pervaded atmosphere of France and Italy, and whose experiences, aside from those with his atelier—where the spirit of the place was half serious, half burlesque—were confined to the offices with the best *clientèle* in New York.

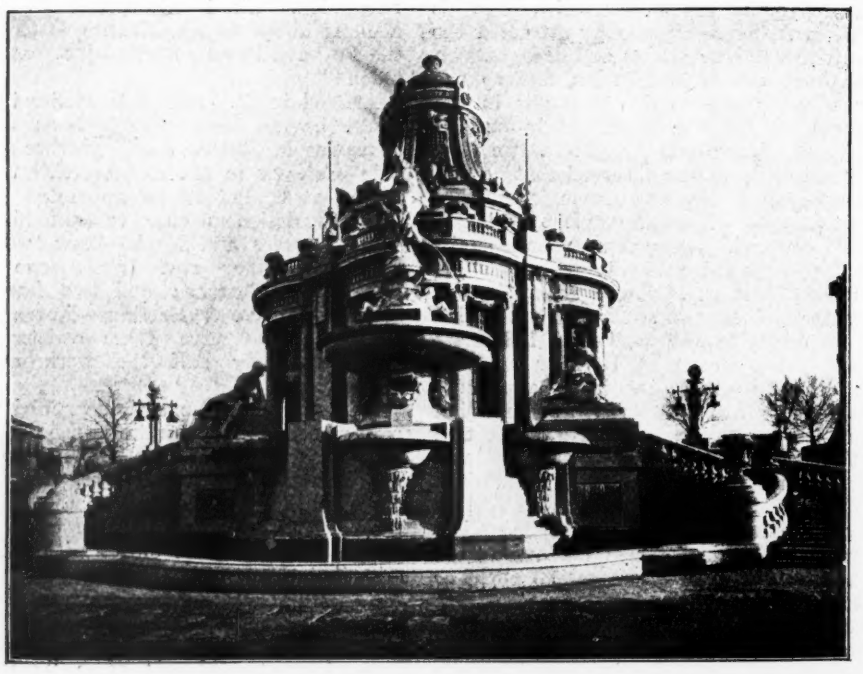
The administration of the St. Louis Fair was in the hands of a remarkably "strong crowd." The Director of Works was a veritable giant stepped out of a "children's story-book." He had "no particular use" for the Board of Architects of which he had the honour to be Chairman. "Understand, Masqueray," he remarked to the Chief of Design upon his arrival in St. Louis, "you are not working for those fellows, but for *me*."

"I shall work *with* you, but not *for* you," was the independent reply, which, be it said to his credit, the Director accepted with evident satisfaction.

Throughout the designing of the Exposi-



St. Louis Exposition, 1903-4: Part of Plan.
Mr. E. L. Masqueray, Chief of Designs.



St. Louis Exhibition, 1902-3: Restaurant Pavilion and Fountain.

Mr. E. L. Masqueray, Architect.

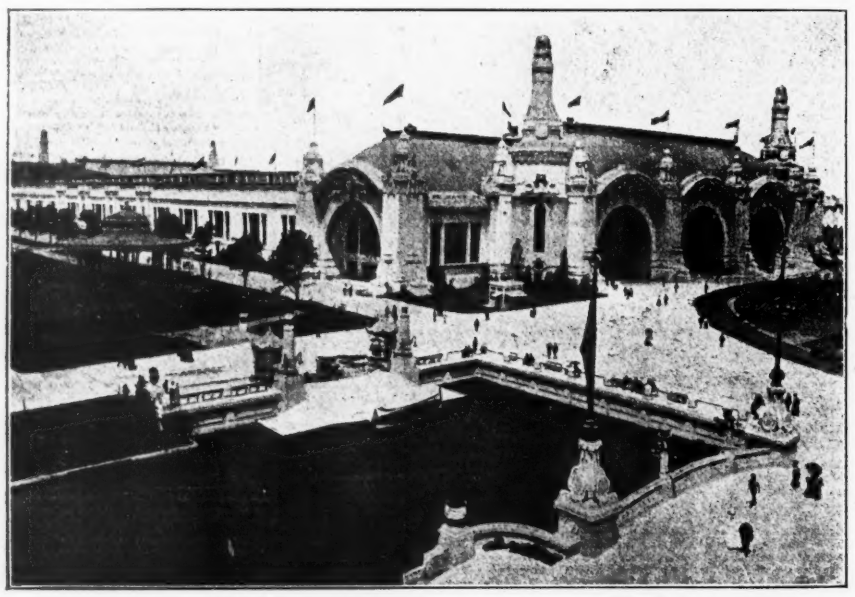
tion, which occupied two years' continuous effort of the Chief of Design and his staff, with the assistance of about one hundred draughtsmen, two elements were at work —on one hand were the eastern and foreign participants and the Board of Architects, on the other the majority of the Directors of the Exposition and the Director of Works. These played the parts of the hammer and the anvil, and the Chief of Design was the thing between. But out of it all Masqueray arose with conspicuous credit. Of all the buildings at the Exposition his were the most modern and original, most economical and distinguished, the best adapted to the material employed, the only ones which were neither severely classical nor over-ornamented. Simplicity of scheme, breadth of disposition, good proportions and good scale were the objects sought and always studied. His constant admonition to his assistants was summed up by one of them—a wag who had discovered his difficulty with the English final letter or syllable—in the humorous epigram: "The princip(al) thing is to make it simp(le), then it will be less troub(le) to buil(d)." Ornament was only employed where essential to the colour values of the design, and in this respect alone all exposition designers had something to learn from his work.

The study of scale, especially as applied to the details, became very interesting in the development of the scheme. Constant simplification took place, and ultimately the designs developed an entirely different scale from everything else in the grounds. Masqueray felt that in respect to scale the works of all the members of the Board of Architects were as much at variance with one another as the personal tastes of the architects. It would have been impossible to adopt the scale and style of any one of the several buildings without being incongruous with others, and it was felt that it was best to strike out along new and independent lines. He tenaciously adhered to the original general scheme of plan adopted by the Board of Architects, for which Messrs. C. Howard Walker, Cass Gilbert, and John M. Carrère were jointly the authors. The original plan would, however, have been cast to the winds: the crowning hill might have been left a staring wilderness, the Festival-Hall—a master-work by Mr. Gilbert—would probably have been omitted altogether; the gardens would have fallen to the tender cares of the "landscape gardener," the bridges to the Gradgrinds of the engineering departments, had he not naively assumed responsibility for all, produced designs for the various parts, and "fairly sweated blood" for their accomplishment. But his tact, determination, and bland diplomacy gained point by point, feature after feature, until almost everything necessary to the original plan was accomplished, and what few things were not finally adopted

St. Louis Exhibition, 1902-3: Restaurant Pavilion and Portion of the Colonnade.

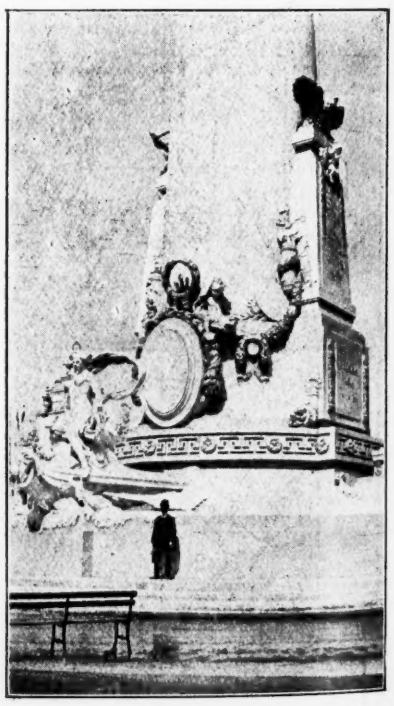
Mr. E. L. Masqueray, Architect.

were omitted due to the fact that the longitudinal axis chosen by Mr. Walker proved an injudicious one, which led to the abandonment of the "closure" at the main entrance. The original plan was, moreover, a mere preliminary study, and



St. Louis Exhibition, 1902-3: Transportation Building.

Mr. E. L. Masqueray, Architect.



Base of the Monument to Commemorate the Louisiana Purchase, St. Louis.

Mr. E. L. Masqueray, Architect.

a great deal of thought had to be expended upon it by Mr. Masqueray before it reached the stage where it might be regarded as fairly practical.

Some idea of the extent of the grounds at St. Louis may be conceived by a comparison with the White City at Shepherd's

Bush. The extent of the grounds at the latter is 140 acres, of the St. Louis Exposition 1,240 acres (nearly 2 miles square). The gardens, avenues, terraces, bridges, cascades, colonnade of States, embankment walls and decorations, lamp-posts and ornamental flag poles, kiosks, fountains, monuments, pedestals for statuary, and a multitude of other details, were originated and developed in his studio, which was nicknamed "The Latin Quarter." In addition to these were the following large buildings with their ground dimensions: Transportation building, 525 ft. by 1.300 ft.; Agricultural, 575 ft. by 1,800 ft.; Horticultural, 350 ft. average by 800 ft.; Forestry and Game, 300 ft. by 600 ft., and the Restaurant Pavilions terminating the Terrace and Colonnade of States, which were 125 ft. in diameter. The height of the "Order," or distance from ground level to top of cornice, was 65 ft., and the average height of the buildings about 85 ft. to the top of the architectural treatment. It is a pity that these fine designs were for buildings of which only the memory and photographs still exist. One cannot but regret that such a building as the Transportation was not built as a permanent railway-station on the site where the Wabash Railroad has erected a "mass of architectural commonplace."

The success of Mr. Masqueray's work at St. Louis brought him immediately afterwards some large commissions to execute in the State of Minnesota, and these, though they have been in progress during several years, have not yet reached completion, and some of them will continue in course of construction for several years to come. Chief among them are the Roman Catholic Cathedral at St. Paul and the Pro-Cathedral at Minneapolis, each of which is an important commission.

The Cathedral at St. Paul is a plan of exceptional merit for the purposes of the Roman Catholic Church in the United States. It possesses all the fine qualities and characteristics of the old traditional

Cathedral of St. Paul at St. Paul, Minnesota. Interior.

Mr. E. L. Masqueray, Architect.

plans of the Church in Europe, but meets the demand of the people in America to bring as near as possible together the priest people and choir, in order that the altar and pulpit shall be in clear view from every part of the church, and that the voices of the priest and choir may be distinctly heard by the congregation. The comparative shortness of length to width, and the apsidal treatment of the ambulatory between the body of the church and the surrounding chapels, at once reminds us of the mediæval church in France, and the general outline of a cross retains the old symbolic form; but to create a modern structure suitable to the needs or wishes of the congregation it has been necessary to modify the relative proportions of the different elements of the ancient buildings. The nave and transepts are short and wide, instead of narrow and long. At their intersection is a great dome 96 ft. in diameter and 175 ft. high, internal measurements, and lighted by twenty-four large windows in the drum. The nave and transepts are in height 84 ft. and the width 60 ft. The ambulatories are 12 ft. wide. The sanctuary occupies the whole apse, and is 60 ft. wide by 65 ft. long. It is surrounded by an arcade with columns of marble, which separates it from the ambulatory. Beyond the ambulatory surrounding the apse are the "chapels of the nations, six in number, dedicated to the apostles of the several races from which are derived the people of the north-west." The church has a seating capacity of 3,000 in pews and 1,000 more in removable chairs.

The doctrine of simplicity of design, frank expression of the interior by the exterior, broad treatment of surfaces and careful consideration of the use and placing of ornament, which Mr. Masqueray taught as a professor, he has practised here in his own work. The building material is a light grey-pink granite, and, the texture being coarse, the simplicity of the details is doubly appropriate.

The external dimensions are as follows: Length, 274 ft.; width of transepts, 214 ft.; width of the dome, 120 ft.; dimensions of the principal façade, 140 ft. wide by 130 ft. high; the height of the towers is 180 ft. Located under the nave and entered by staircases in the towers is the crypt, which will contain an important chapel and large rooms for meetings of societies and catechism classes. The grounds in front of the church are treated as an architectural setting and monumental approach to the cathedral.

The Pro-Cathedral of the Immaculate Conception at Minneapolis is based on a less traditional, though also old, type of plan than that of the Cathedral of St. Paul. Mr. Masqueray had in this case much less money to spend, and was not required to provide so large a seating capacity. He made a study of the great wide-naved Churches of Aquitaine and Perigord, and came to the conclusion that, as he has himself written, "a modern church on the same general lines would be æsthetically appropriate and well adapted to modern religious conditions in the United States. Those French churches, the finest examples of which are the Cathedrals of Albi and Cahors, give an impression of unsurpassed grandeur and simplicity."

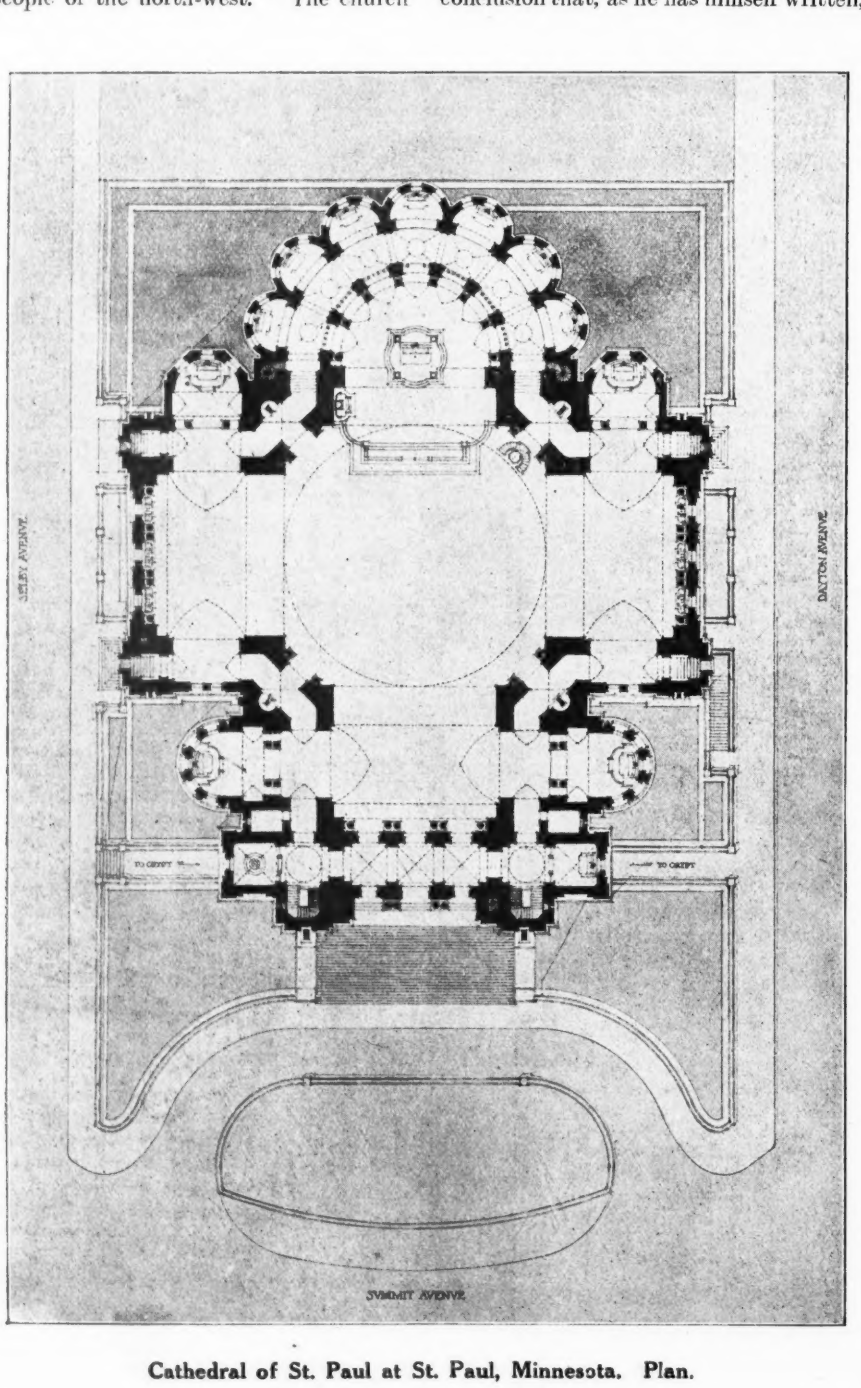
The Pro-Cathedral is a very large church; the nave, 80 ft. wide by 135 ft. long, affords an unobstructed view of the sanctuary from every pew in the building. The piers at the corners of the sanctuary carry the four large arches which support the dome, which rises directly above the altar, a clear interior height of 150 ft. Over the entrance vestibule is the organ loft and music gallery; the latter will accommodate a choir of 200 persons. Externally the interior is well expressed; the main divisions of entrance, nave, and sanctuary are evident at a glance. The external dimensions are 140 ft. wide by 274 ft. long. The bell-towers on the front rise to a height of 130 ft. The material is white Vermont granite.

The modern conditions of cost and time do not enable an architect in these days to produce work on a grand scale, in which the charm resulting from the combined but individual efforts of a number of artists and artisans, working independently, but each carrying on the work of the other, may be conduced. On the other hand, they lead to the rapid development and completion of great individual works, or works upon which a number of artists study together a given problem and complete in a few years what formerly required as many decades; and if we find our modern buildings somewhat lacking in charm we shall not find them wanting in the greater qualities of composition, grandeur, and suitability to purpose.

It is as regards the quality of charm that we shall always find a new building deficient as compared with an old one. The stains of weather and the softening lines which the tiring of material and the eating away of its strength by the "little demons of decay" give to the old fabric, the patches of newer work which are like the touches of the brush of the water-colourist in his painting, serve to suggest life which may not have been so apparent in the building when it was first erected. The more the building touches upon the life of the people, or the more interest they take in its upbuilding and maintaining, the more it will gather in charm.

Critically, for many reasons, we must confine comparison of the buildings of the time to others of their kind erected under similar conditions. To what extent has the store of experience of the great masters handed down to us through all the ages been reckoned with? Is there progress from good precedent? Does it satisfy the eye, the intellect, the imagination of the beholder?

As to the first of these tests, the architects of the United States have not produced many, if, indeed, any, churches to compare with the St. Paul Cathedral or Minneapolis Pro-Cathedral. There exist very few of considerable magnitude which could in any way be regarded as a religious temple—a monument raised as a tribute to a consecrated ideal; and of the few there remain still fewer of which one may say there is art without archæology. As to whether the architect of the churches at Minneapolis and St. Paul has duly heeded the results of the experience of those who have gone before, do we find anything materially wrong with the scheme of arrangement? Is there anything which has so often proved a failure that further experiments upon it should be discountenanced? The present writer believes they will be hard to find—that, in fact, the very conclusions which Bramante, Michelangelo, and Wren arrived at as regards the plans of St. Peter's and St. Paul's, which we are all bound to believe would have been better in the result than the buildings as executed—the scheme of the Greek cross plan in which the dome should not crush the



Cathedral of St. Paul at St. Paul, Minnesota. Plan.
Mr. E. L. Masqueray, Architect.

building nor the building hide the dome—are those adopted for the St. Paul Cathedral. Externally the building at Minneapolis is composed on lines very similar to some of the most successful churches of Southern France, and as regards composition the latter usually leave little to be desired. In the matter of progress from good precedent—if we admit that good precedent has been followed—is not the fulfilling of a reasonable modern demand, such as being able to see and hear, all that we can ask of progress? If beauty is maintained and the desired result is obtained is not that progress of the greatest importance?

As far as can be judged from the drawings there appears to be a reason for the existence of every feature in each design, and the structure has everywhere evidence of strength. Where these qualities exist neither mind nor eye will turn against the design. And if we find the scale—the measure of the man against the building and its parts—and the proportions—the relation of forms or masses one to another—is that not fair satisfaction to the balanced imagination?

Material, colour and age may lend charm or at least pleasure. And if we may ultimately add these to the admiration we must indubitably hold for the high talent in the less illusive side of architectural design, which is so evident in all the works thus far produced by the subject of this study shall we not be justified to include the name of Masqueray upon the list of our most distinguished contemporary architects?

THE ARCHITECTURAL ASSOCIATION:

FIRST SUMMER VISIT.

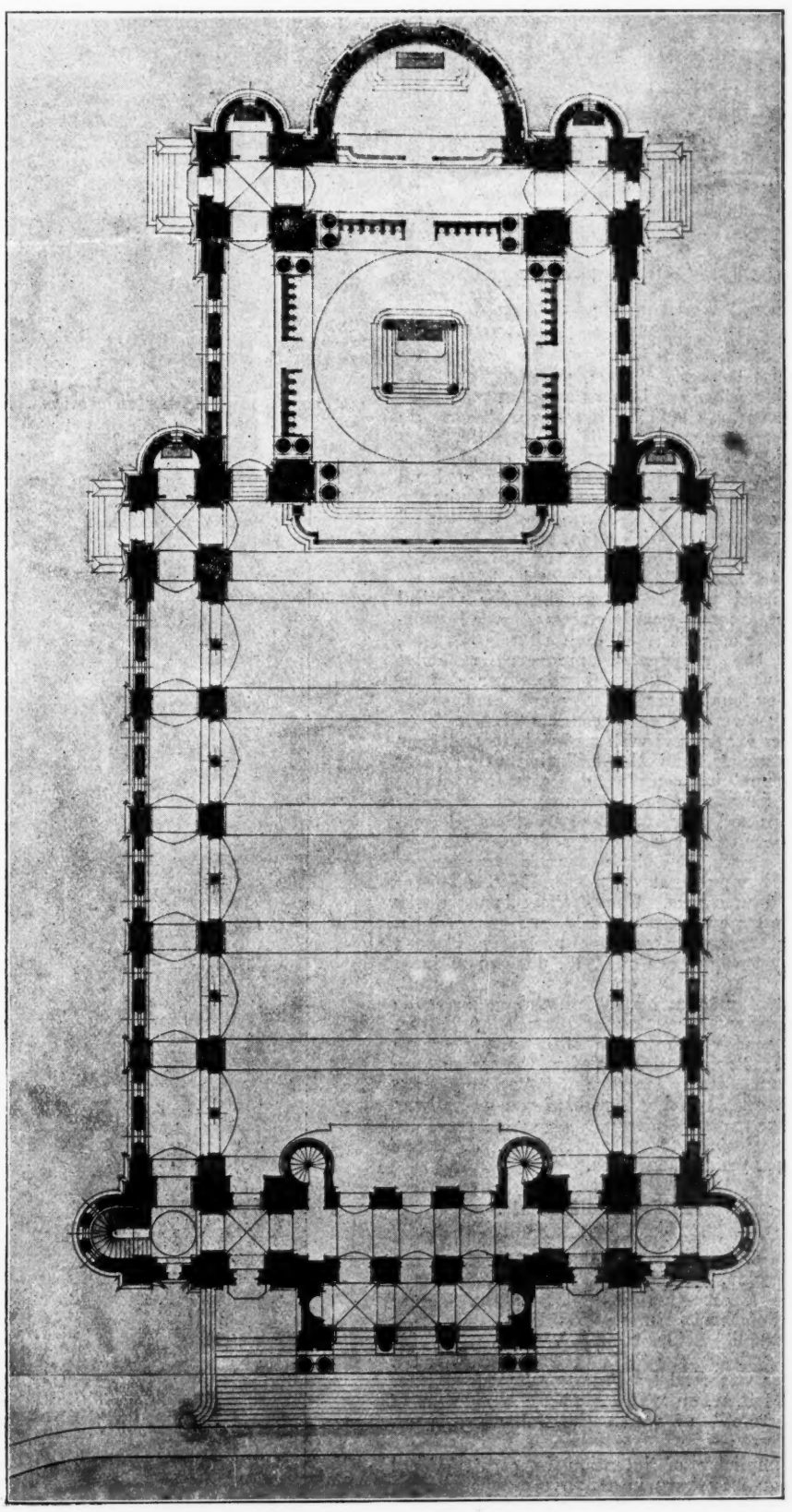
THE first summer visit took place on Saturday, June 10, and a very good attendance of members availed themselves of the opportunity of inspecting the large house on the borders of Burnham Beeches, which has been designed by Mr. E. L. Lutyens for her Highness Princess Alexis Dolgorouki. Mr. Lutyens' work is full of surprises—it is never possible to refer to his "characteristic manner" in the same sense as can be done with some other designers. In this case the building is a towering pile of whitewashed brickwork, with parapeted roofs, sash-windows, and green sun shutters, recalling in style those cool and comfortable late Georgian houses which one sometimes encounters in sea and riverside resorts of the early XIXth century. The house stands upon a hillside, its north front closely approaching a by-road, alongside which its major axis runs. Mighty things have been done in the way of alterations of level, and fine terraced gardens are on the west front between the highest-standing, narrow end of the house and the main road. The building is in main three and in part four stories in height. The approach to the principal floor is by a broad flight of internal steps from a colonnaded loggia in the centre of the long road front, giving, *en passant*, a glimpse through a wrought-iron gate of a circular-ended internal court which almost divides the house into two portions. The chief rooms are arranged *en suite*, passing round the east and south fronts of the house. All the internal detail is of the simplest description. At the head of the entrance flight is the Big Room, extending through the entire depth of the house from north to south, with a projection on the east containing a billiard table. This room extends through two stories, and is overlooked by a music gallery above the entrance flight and ante-room. Entered from the big room and disposed axially on the south front are in succession the circular drawing-room, the winter garden (also two stories in height), the dining-room, and the smoke-room. As before mentioned, the circular court almost severs the house on its cross-axis, the reception-rooms generally being to the east, and the kitchen and offices to the west of this axis, on which are the loggia, court, inner hall, and winter garden, the dining and smoke rooms lying thus on the southern side of the kitchen quarters, which are quite internal. The main staircase is not made a feature; one is, in fact, hardly conscious of any staircase, but rather of isolated flights of steps occurring at intervals during the perambulation of spacious corridors. The first and second floors are entirely occupied by bedrooms, with their attendant bathrooms and other conveniences, and a very large proportion of dignified corridor space, which forms an excellent field for the display of pictures. The greater number of the bedrooms are planned with a bed recess in the continental fashion.

The south front of the house, shaded by a noble oak and facing the lawn and beech-woods, has an expression of great reserve. It is punctuated by two segmental bays, which mark the drawing and dining rooms, and the central break is indicated by a drop in the parapet in which is introduced a finely-carved coat of arms. To the east is a walled rose-garden and circular pergola. One of the most charming details noticed in the house was a painted map of the surrounding country, forming the dial of a wind gauge. This served as the overmantel in one of the rooms. Decoratively painted in primary colours, with something of that play of fancy which characterised the old map-makers, it was an altogether admirable feature, and considerable interest as to its authorship was generally displayed.

ENGINEERING SOCIETIES.

The Society of Engineers (Incorporated).

The second vacation visit of the present session took place on Thursday, June 8, when, by the courtesy of the engineers, a party of members of the Society and their friends were privileged to inspect the works



Pro-Cathedral, Minneapolis. Plan. (*Page* **740.**)

Mr. E. L. Masqueray, Architect.

in progress in connexion with the extension of the Central London Railway from the Bank Station to Liverpool-street. The work of driving the tunnels is being carried out from a shaft in Bishopsgate, near Acorn-street, and will be continued up to the junction with the company's existing sidings at the Bank. The small running tunnels are 12 ft. 5 in. internal diameter, each ring being 20 in. wide with 4-in. flanges, and are made of four radial-jointed cast-iron segments, two top segments and a key whose sides taper slightly in the reverse direction to the key-stone of an arch; this admits of ease in erection. The joints between the flanges of adjacent rings and segments are formed of creosoted wood packings, and are bolted together in such a way that the horizontal joints of one ring break joint with its neighbours. The weight of each ring is 33·4 cwt. Under ordinary conditions nine rings or five lineal yards of tunnel are built every twenty-four hours. The shield by which these tunnels are driven consists of a cast-iron or steel cutting edge, followed by a skin of ¾-in. steel plates, butt-jointed, which are kept to the cylindrical form by means of suitable strengthened segments and girders, well bolted and riveted together. Forward movement is obtained by means of 7-in. diameter hydraulic rams, eight in number, disposed round the inside of the skin and arranged so that the tongues press against the iron lining already built. These rams are controlled individually or collectively by a set of valves, so that by a suitable combination the direction of the shield may be guided. The maximum pressure available is 2,000 lb. per square inch, which gives a total maximum push of 275 tons In the case of the 21-ft. 2½-in. internal diameter station tunnel, the shield is on the same principle as that just described, and the method of procedure in construction being the same. There are twenty-two rams of 7⅛-in. diameter, each capable of exerting a total force of forty tons as a maximum, and in place of hand erection of the cast-iron segments hydraulic erectors are used. The rings of this tunnel are 18 in. wide, with 6⅝ in. flanges, and consist of ten radial segments, two top segments, and a key. The horizontal joints are machined true to radius, but the vertical joints are made with creosoted wood packings. The weight of each ring is 4⅛ tons, and the anticipated progress is about five rings or 2½ lineal yds. per day of twenty-four hours. The plant at the site of the working shaft consists of two 3-ton cranes for dealing with materials to and from the tunnels, and the following compressors for supplying compressed air to the tunnels and for operating the pneumatic-hydraulic pumps and grouting pans: One vertical compressor with one cylinder 19-in. diameter, 8-in. stroke, and three Reavels compressors, each having eight cylinders, 12-in. diameter and 6-in. stroke. One of these latter works against a pressure of 15 lb. per square inch, the other two are two-stage machines and work against a pressure of 60 lb. per square inch. There is also a compressor by Ingersoll, measuring 18 in. by 18⅛ in., and an hydraulic intensifier converting a pressure of 750 lb. per square inch to one of 1 ton per square inch. The contractors for the work are Messrs. John Mowlem & Co., and the engineers to the Central London Railway Company are Messrs. Mott & Hay, of Westminster, for whom Mr. H. J. Deane acts as resident engineer.

The Concrete Institute.

The two days' summer meeting of the Concrete Institute was held on Wednesday and Thursday, June 7 and 8. On the morning of June 7 a meeting took place in the Lecture Hall of the Institute at Denison House, 296, Vauxhall Bridge-road, Westminster, Sir Henry Tanner, I.S.O., in the chair, when a paper was read by Professor Beresford Pite, F.R.I.B.A., on "The Æsthetic Treatment of Concrete," of which the following is an abstract:—

Simplicity of intention in constructional design may issue in a native or spontaneous æsthetic quality. An undesigned beauty reached without treatment is often attained by such a structure as the Forth Bridge or a ferro-concrete silo. Mediæval architecture grew up as a constructive method without æsthetic purpose, and achieved results of great beauty. Is not the opportunity given by the new process of reinforced concrete building one that could be utilised for the erection of the much-desired original and modern style of architecture? Are the new material and method together sufficient motive? Truthfulness of design to constructive purpose and elemental soundness of proportion, are these sufficient to provide that pleasantness to the eye which is desiderated? Four conclusions arrived at, first, we have no instinctive guidance towards an unbiassed originality for a concrete architecture; second, abstract principles like those invoked of proportion are of no assistance; third, superficial treatments, as by colour, are insufficient for architectural expression, though valuable in assistance; fourth, the texture of concrete surfaces modifies and imparts special character to any forms employed for architectural purposes. Therefore, while modern considerations of utility and of novel constructional methods determine proportions, and may ultimately develop æsthetic qualities, the scholarly and critical analysis and employment of traditional architectural forms suitably modified for execution in concrete is the proper method for the æsthetic treatment of concrete. A historical review of the development of some characteristics of Egyptian, Greek, and Roman architecture furnishes proofs of the non-relation of æsthetic treatment to direct constructive facts. Idealised representations of ancient types form the basis of both Egyptian and Greek characteristics, while the Romans frankly separated the decorative from the practical purposes of architecture. In Gothic art, however, the constructive craftsman was the artist, and the development of decoration is integral with building craft. In the other crafts of wood and plaster work motives are imitated from stonework and illustrate the modifications produced by the texture of the material into the design of details; of this the Elizabethan ornamental plastered ceilings originated from Tudor vaultings are illustrations.

Modern novelty of constructive method does not remove necessity for study of architectural development, but it will aid adaptation and modification, and thus pave the way for development. Modern continental design is too eager to demonstrate elasticity possible in employment of form in unusual architectural relations. At home we still are safely and timidly putting brick and stone fronts to concrete buildings. There is a great future before concrete building, and it deserves that close and patient architectural study which, deriving from the past, will give certainty to the future æsthetic treatment of the material.

A discussion followed in which Mr. Heathcote Statham, Mr. A. Alban H. Scott, Mr. Edwin O. Sachs, Mr. J. Ernest Franck, Mr. C. H. Colson, Mr. A. F. Corbett, Mr. Percival M. Fraser, and the President took part.

An interim report of the Tests Standing Committee on "The Testing of Concrete, Reinforced Concrete, and Materials Employed Therein" was then presented, and discussion thereon deferred until next session.

In the afternoon a visit was paid by permission of the architects, Messrs. Lanchester & Rickards, to the Wesleyan Memorial Hall, Tothill-street, Westminster, now in course or construction, and in large part of reinforced concrete.

In the evening the first annual dinner of the Concrete Institute was held at the Trocadero Restaurant, Shaftesbury-avenue, Piccadilly-circus, W.

On the morning of Thursday, June 8, a meeting took place in the Lecture Hall of the Institute at Denison House, Westminster,

Old Gateway, Gidea Hall, near Romford.

Mr. E. P. Wells, J.P., in the chair, when a paper was read by Mr. Alfred E. Corbett, F.R.I.B.A., on "The Y.M.C.A. Building at Manchester." A discussion followed in which the following took part:—Mr. W. C. Perkins, Mr. G. C. Workman, Mr. H. E. Yeatman, Mr. S. Bylander, and Mr. E. P. Wells.

The report of the Reinforced Concrete Practice Standing Committee on "The Standardisation of Drawings of Reinforced Concrete Work" was then presented. The discussion thereon was deferred until next session.

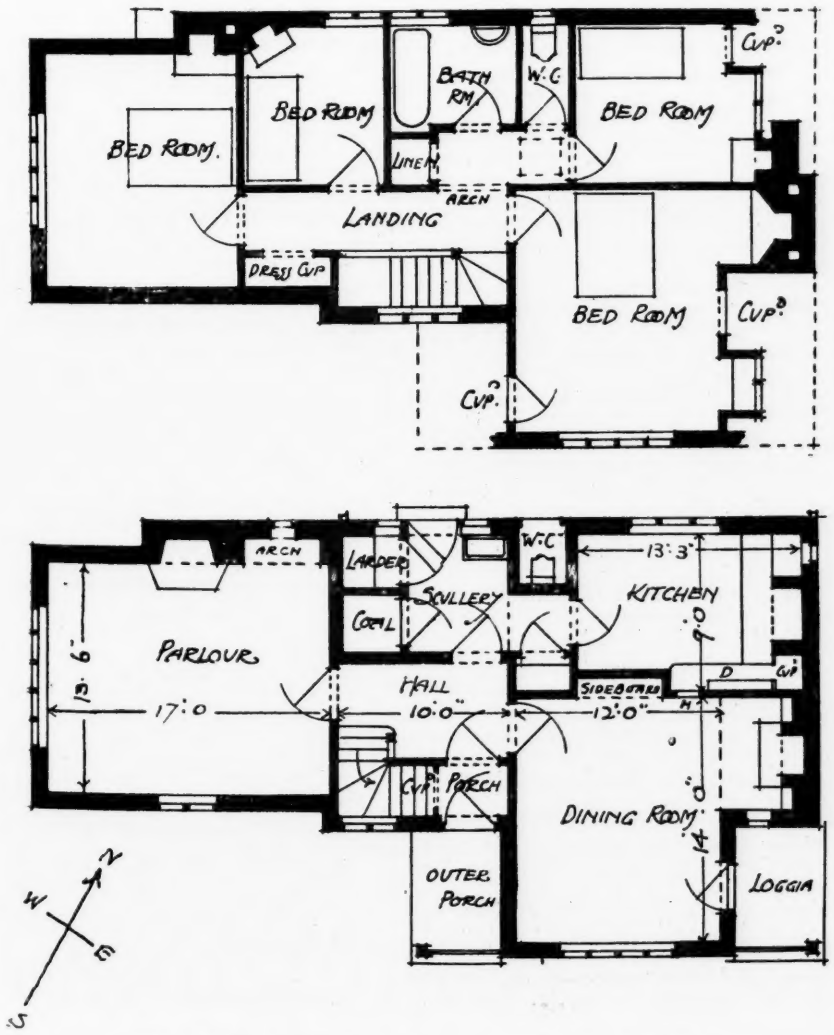
In the afternoon a visit was paid to inspect a wharf and warehouse now being constructed of reinforced concrete piles, floors, and walls in London Dock by permission of Mr. Frederick Palmer, C.I.E., M.Inst.C.E., Engineer to the Port of London Commissioners.

In the evening a conversazione was held in the galleries of the Royal Institute of British Architects, No. 9, Conduit-street, Regent-street. Members were received by the President, Sir Henry Tanner.

GIDEA PARK COMPETITION.

THE house illustrated in our last issue (p. 712), and ascribed to Mr. E. Turner Powell, was designed by Mr. T. Millwood Wilson. We give Mr. Wilson's plans on this page. In his letter to us Mr. Wilson says:—

"I notice in the criticisms on the planning of the houses generally your remark as to the placing of the bath wastes by the front door. You will notice in my plans that all the plumbing and hot water has been carefully planned, and all the wastes, etc., discharge on the north side of the house, out of view and into one manhole. I would also ask you to notice the sizes of the rooms and the aspects—east and south to the dining-room, south to the hall, and south and west to the parlour; whilst the kitchen has a north window and east for sun in the morning. The four bedrooms all have fireplaces and only two chimney stacks."



Gidea Park Competition: House in Reed Pond Walk.
Mr. T. Millwood Wilson, Architect.

GENERAL NEWS.

The Coronation.

In consequence of the Coronation holidays we go to press on Tuesday next, the *Builder* being published on Wednesday. All communications must reach the editor by first post on Tuesday morning.

Professional Announcement.

Mr. H. Alexander Pelly, F.R.I.B.A., has moved from Gresham House, where he has been in practice (formerly in conjunction with the late Mr. E. A. Gruning) for very many years, to No. 144, Leadenhall-street, E.C.

Coronation Thrones for Westminster Abbey.

The Thrones which are placed on the daïs in the theatre have been reproduced by Messrs. Morris from the originals at Knole in the possession of Lord Sackville. They are of Jacobean type, with X-shaped back supports of beechwood. The original was covered entirely in a crimson satin, over which was worked a scroll design in appliqué and gold thread. This is replaced in the Coronation Thrones by a crimson silk damask which was specially designed by William Morris many years ago. This fabric is dyed with pure madder and woven on the Morris hand-looms at Merton Abbey. The beechwood frames are covered throughout with this material, and are outlined with gold braid and fringes of various depths. The boss at the junction of the supports carries a York rose of gold and silver hand embroidery, and on the backs of the chairs the Royal Arms are embroidered, with the initials respectively of the King and Queen in gold. The Rev. E. Dorling, who designed the "King's Beestes" on the moat bridge at Hampton Court Palace, has made special designs for these armorial devices. The bullion fringes, tassels, and trimmings used are copied as closely as possible from those on the Knole Park original.

The Architectural Association.

The following is the list of awards for Session 1910-1911:—A.A. Silver Medal, Mr. G. W. Home; A.A. Silver Medal (Hon. Mention), Mr. H. A. Ross; Architectural Union Company's Prize, Mr. C. F. Butt; Banister Fletcher Bursary, Mr. T. F. H. White; A.A. Essay Prize, not awarded.

Coronation Chairs, Westminster Abbey.

The Chairs of Estate on the south side of the Sacrarium have been made and carved by Messrs. Howard & Sons, of Berners-street, in English walnut, and are a reproduction of the chair at Knole Park, of the XVIIth century, in the possession of Lord Sackville. The material with which the original was covered was a Genoa velvet of the XVIIth century Italian design, of which Messrs. Warner & Son have made a reproduction.

Coal Smoke Abatement.

Presiding at the annual meeting of the Coal Smoke Abatement Society on Tuesday, Sir W. B. Richmond, R.A., alluded to the increase of sunshine, consequent to a great extent upon the suppression of the smoke nuisance. He spoke of the objections the Society held to the Act of Parliament which prohibited "black" smoke only, and said that the agitation would be continued, with a view to the deletion of the offending word.

Society of Antiquaries.

Professor S. H. Capper, M.A. (Edin.), A.R.I.B.A., Professor of Architecture, Victoria University, Manchester, and Mr. G. Eley Halliday, F.R.I.B.A., of Cardiff, have been elected Fellows of the Society of Antiquaries, London.

Tapestries for Westminster Abbey.

The Duke of Buccleuch and Lord Dalkeith have lent tapestries which have been hung on the walls of the Abbey and of the annexe in connexion with the Coronation. They include a valuable series of Flemish tapestries of the XVIth century.

St. Paul's Bridge.

We understand that Professor Beresford Pite attended at the House of Commons on Wednesday with plans showing the various schemes for the proposed bridge, and these he explained to members.

Unemployed Insurance.

We are asked to state that a conference will be held at Toynbee Hall, in Whitechapel, on Monday evening, June 19, at 8.15, in order to discuss the unemployment insurance proposals. This portion of the National Insurance Bill at present chiefly concerns every employer and workman in the building and engineering trades, and it is hoped that all organisations in East London in these trades, whether of employers or workmen, will send representatives. As, also, a trade union in any branch of industry may bring itself within the scope of the Bill, all East-end branches of trade unions are invited to be represented.

BOOKS RECEIVED.

BRITISH CATHEDRALS. With an Introduction by John Warrack. Illustrated. (Edinburg: Otto Schulze & Co. 2s. 6d. net.)

THE COUNTRY GENTLEMEN'S ESTATE BOOK, 1911. Edited and compiled by Wm. Broomhall. (London: The Country Gentlemen's Association, Ltd. 21s.)

COMPETITION NEWS.

Stockport Police Court Competition.

A limited competition for new police station and courts has been instituted by the Stockport Town Council. The building is to be erected in Wellington-street. It is stipulated that the elevations should be mainly of brick, and that the cost is not to exceed 25,000*l*, including 2,500*l*. for furnishing.

Professor Reilly, of Liverpool University, is appointed assessor.

Eight local architects and forty-nine architects outside the borough sent in applications to compete. It was decided to invite the eight local firms to submit designs, and the following sixteen firms, who have had experience in the erection of similar buildings:—Messrs. Appleyard & Quiggin, Liverpool; Mr. H. Beswick, Chester; Messrs. Cheers & Smith Blackburn; Mr. Edwin Cooper,

London; Messrs. Everard, Son, & Pick, Leicester; Mr. Henry T. Hare, London; Mr. T. Kershaw, Halifax; Messrs. W. & T. R. Milburn, Sunderland; Messrs. Wills & Anderson, London; Messrs. Mountford & Clapham, London; Mr. J. P. Osborne, Birmingham; Messrs. Perkin & Bulmer, Leeds; Messrs. Potts & Hennings, Manchester; Mr. S. B. Russell, London; Messrs. Stones, Stones, & Atkinson, Blackburn; Mr. G. H. Willoughby, Manchester, and Mr. Alfred Cox, London (joint); and Messrs. Woodhouse, Corbett, & Dean, Manchester.

MAGAZINES AND REVIEWS.

THE Art Journal contains some lithographs by Mr. Joseph Pennell of New York subjects and a review by Mr. Rudolf Dircks of the Royal Academy Exhibition. The sculpture of Mr. W. R. Colton, A.R.A., is illustrated, and under the title of "Domestic Decoration" examples of miscellaneous work are described.

"Some Features of Mexican Architecture," in the *Burlington Magazine*, is an article of interest to architects, and some of the other contributions, such as the "Notes on Italian Medals" and "Notes on Pictures in the Royal Collections," are attractive.

An old Flemish house in Bruges, "The House of the Visitation," is described in the *Connoisseur*. The owner, M. Jean de Brouwer, has restored and completed the building both inside and out, and the decorations of the walls take the form of paintings by M. Rommelaere, who has entered into the spirit of the scheme and produced designs in keeping with the character of the house. Mr. Laking writes an article on "Armaments of the Stage," and an illustrated note on Bunyan's copy of Foxe's "Book of Martyrs" is topical. Among the coloured illustrations is one of the famous Dymoke suit of armour in Windsor Castle.

"Conversations at the Salon and the Royal Academy," contributed by Mr. H. H. Statham to the *Nineteenth Century*, consists of opinions expressed in dialogue form by the mythical Sir John and Lady Bilderby and M. de Latélier. The Hon. Emmeline Plunket, in "Stonehenge and the Hyperboreans," dwells rather on astronomical than archæological matters, but the article is interesting to antiquarians.

Lady Edward Cecil writes in the *National Review* on "Some Scottish Homes." The article is chiefly a study of the housing and industrial conditions of the poor in Dundee, where there is "a mass of distress which merely numbs the mind to write or read."

In the *Century* Mr. Joseph Pennell has some illustrations of London, Cardiff, Sheffield, Leeds, Dover, Bradford, and Dudley in connexion with a paper on "The Commercial Strength of Great Britain." The article on "The Women of the Cæsars" is continued, with portraits from statuary and coins, while an old title-page and reproductions of engravings give pictorial interest to an essay on "Martin Luther and His Work."

Harper's opens with an "hitherto unpublished narrative" by Thackeray, who, in these "Cockney Travels" (1842), wrote as follows on Tintern Abbey:—

"I never saw such a magnificent elegance and simplicity in any Gothic building. All the ornaments, the windows, the arches of the quaint old doors, rising up out of the brightest sward in the world, are wonderfully graceful and pure; nor could an architect, as I fancy, do better than spend a couple of summer months at Tintern, and without having recourse to sketch book, or rule or compass, stroll round and round the ruin all the day through, lie at his leisure in the neighbouring croft and orchards, and fill his mind with the noble sentiment of the place. It is not disfigured by any of the elaborate architectural geegaws and grotesque ornaments which one sees in the buildings of the fifteenth and sixteenth centuries. The whole structure and all parts of it are distinguished by the most high-bred propriety and simplicity."

The *Journal* of the Royal Sanitary Institute contains papers on "Rescue Work in Mines," by Dr. Leonard Hill; "Purification of Public Water Supplies," by Mr. J. A. MacPherson; and "Liquid Disinfectants," by Dr. Louis C. Parkes.

CORRESPONDENCE.

Crittall Manufacturing Company *v.* London County Council.

SIR,—The thanks of the profession are due to Dr. F. St. John Morrow for his letter which appeared in the *Builder* of the 26th ult; and the result of the "Crittall Case" is very carefully and practically set forth by Mr. E. Greenop, whom we all know is entitled to every consideration for his particular knowledge on such a subject.

Your correspondent "J. S. B." agrees with one of Mr. Greenop's suggestions for meeting the difficulties of the case; and your correspondents "Sub-contractors" naturally take a rather different view.

Architects are gradually arriving at the conclusion that the better way out of the difficulty is to abolish altogether the introduction of sub-contractors; but then, again, one is met with the difficulty of entrusting special works to the control of a general contractor, whose aim may be to import into the work the specialist who best suits his interests.

One course would be for the architect to select his sub-contractors, as he does now, and provide for the payment to them direct by the client, on the architect's certificate; but it can be easily understood that this would involve more trouble on the part of the client than he would care to accept, and create complications which it should be the architect's endeavour to avoid.

It appears to me, after the decision in the Crittall case, that a special clause must be inserted in the contract relieving the client from the possibility of having to pay twice over for the same goods, and that could be done by a proviso making the general contractor liable for payments to the sub-contractors on the architect's certificate, and putting the sub-contractors under the general contractor for such payments. In that case the sub-contractors would have to take their chance with other persons who supply goods and work to the general contractor; and it would be for sub-contractors either to consent to this mode of payment or to decline to have anything to do with the work. But what about the Crittall case?

Personally, I usually certify to the general contractor for payment to the sub-contractor, and I at once inform the sub-contractor of such certificate; it is for him to see that he is paid; and, although I may not be justified by the terms of the present Institute contract to do so, I decline to certify for any further payment to the general contractor until I hear that the sub-contractors have been paid the amounts previously certified by me.

With regard to the "squeezing" which, unfortunately, in many cases takes place at the hands of the general contractor, I endeavour to help the sub-contractor by always certifying the amounts net, so that it is the sub-contractor's own fault if he submits to any deductions from the net amount so certified, I having in the contract given the general contractor the opportunity to place what sum he chooses for his profit, carriage, fixing, etc.

I am afraid it all comes to this, however irksome it may be, that, until the Crittall case is reversed, architects must see to it that when they compel the general contractor to employ sub-contractors, those sub-contractors shall be paid direct by the client.

WM. WOODWARD, F.R.I.B.A., F.S.I.

SIR,—I had not intended engaging in further correspondence on this case had not your correspondents, "Sub-contractors," misinterpreted the views I expressed in your issue of the 2nd inst.

It is obvious that any fair-minded architect will help a sub-contractor consistently with the protection of his client's interests—his first consideration.

"Sub-contractors," in their anxiety to sever themselves entirely from the general contractor, cannot even bring themselves to approve of their being paid before him by the architect demanding the receipted account before issuing his certificate.

As to my alternative proposal, if your correspondents will refer again to my letter they will see that the peculiarity lies in their reading of it. What, of course, I suggested was that the undertaking should be asked for after the general contractor had been selected, not before he was known. The sub-contractor, of course, knows where to make the usual trade inquiries, and can act accordingly.

The payment of sub-contractors direct would obviously render them sub-contractors no longer, and the manifest and only object of the arrangement now adopted—namely, the imposition upon the general contractor of the responsibility for all work done upon the job, coupled with the power of the purse in his hands—would be entirely lost. The confusion, disputes, and delay which would inevitably arise with a number of independent contractors working upon a building, and having no inter-relation with, or duties to, each other, need not be dwelt upon, and obviously render such an arrangement out of the question.

Your correspondents need not assume that any part of the sub-contractor's sorrows has failed to reach my ears, or that there is lacking any responsive sympathy, but I repeat that everyone engaged in a building operation, from the labourer upwards, must, as the world goes, take the risk of the solvency of his immediate employer. Has it occurred to "Sub-contractors" that the building owner, having paid them before the general contractor, may find himself with insufficient left to pay the latter?

In reply to the last paragraph of their letter, I fear architects attend a compulsory and continuation school where stern experience leaves them little of the bliss of ignorance as to the commercial side. E. GREENOP.

Decay in Stone.

SIR,—May I be allowed, through the medium of your columns, to draw the attention of those interested in the supply, use, and preservation of building stones, to the efforts of an International Committee to collect information in order to determine the various causes producing decay in stone, more particularly the effect of mortar as influencing deterioration?

The Committee, which is composed of members of the International Association for Testing Materials, and the labours of which are officially recognised by the Royal Institute of British Architects, held a meeting last October, under the presidency of Professor van der Kloes, and made some careful investigations of the stonework of many important buildings, including Cologne Cathedral, under the guidance of its architect, in Holland and Germany. As a result of this meeting a series of questions has been circulated among those interested with the object of collecting such information as may lead to a proper understanding of the problems connected with the decay of stone under varying conditions.

Many of your readers must possess information, gained by experience, which would be of great value to the Committee, and I venture, through your courtesy, to appeal to them to give any particulars which may be at their disposal, or to preserve the list of questions appended with a view to the possibility of future assistance.

It is only by the collection and subsequent digestion of a great number of facts that satisfactory theories can be formulated, and without private assistance in a matter of this kind it is almost impossible to get the requisite information, which is necessarily largely in private hands. I may add that the response to a similar appeal abroad has been very encouraging.

The following are the questions to which answers, even of a fragmentary nature, will be of value:—

1. Nature of building.
2. Situation (*e.g.*, address, nature of surroundings, aspect).
3. Material (*e.g.*, kind of stone or brick).
4. Date of building (or part under discussion).
5. Mortar used (*e.g.*, composition, proportion of sand, analysis or means of obtaining the same).
6. Nature of defect (*e.g.*, incrustation, surface scaling, efflorescence, loosening, bulging of half-brick thickness).
7. Suggested cause (*e.g.*, percolation of water, frost, defective stone, brick, or mortar, old bond timbers, smoky atmosphere, action of sea water).

Any details (which will be treated as confidential if so desired) should be sent to the

President of the Committee, who has long been an enthusiastic worker for the benefit of stone users; Professor A. J. Van der Kloes, Delft, Holland; to me, or, with your permission, to you, sir, for publication.

ALAN E. MUNBY,
Hon. Secretary R.I.B.A. Science Committee,
Member of above International Committee.

28, *Martin's-lane, E.C.*

Unity in the Architectural Profession.

SIR,—The state of mental chaos at which we appear to be arriving on this vexed Registration-cum-Amalgamation question seems hardly likely to be modified by Mr. Middleton's letter in the *Builder* of June 9. For, although Mr. Middleton may—I trust without offence—be described as the Arch-priest of Architectural Registration, and has admittedly devoted many years of thought to the subject, he still appears somewhat uncertain as to the procedure best calculated to attain the end which he so devotedly supports, and even reveals some doubt as to the effectiveness or wisdom of a universal examination test. Yet, presumably, the institution of an examination is essential to the policy which he advocates, and the very doubt which must inevitably arise as to the wisdom of its application as a test of architectural capacity is in itself a proof that the legal registration of architects is both impossibly bad and unnecessary. So that when Mr. Middleton states that "examinations are tests which, I know well, cannot properly be applied in all cases," he expresses what is undoubtedly the truth in their relation to the registering of architects. For the whole difficulty with regard to this matter results from the condition, so well expressed in the *Builder* two years ago, "that art is a great deal more than one element in architecture; it is the element *par excellence*, without which architecture is hardly worth consideration." The proper emphasis and more general appreciation of this truth would do more perhaps to advance architecture and architectural education than any system of registration, even with its accompaniments of amalgamations or incorporations. Has consideration for the art element in architecture formed the motive of those proposed combinations or unions of which we have heard so much of late? The highest æsthetic elements are obviously outside the examination pale; what, then, is left is the practical or scientific side of architecture, which, one would have thought, was already sufficiently well covered by the Royal Institute's examinations, and the value of the latter also sufficiently well understood by the general public. The Institute's membership, while no guarantee of high artistic ability, certifies at least to a fairly sound knowledge of statics, construction, and hygiene, which is practically all that is necessary to afford protection to the public. Where, therefore, is the necessity for that curtailment of artistic liberty which must inevitably result from any attempt to apply legal registration to architecture? What first-class art opinion—English or foreign—can the advocates of registration quote in support of their contentions as to its necessity? Broadly speaking, are we not accordingly forced to the conclusion that the examination basis of a registration scheme is necessarily calculated to give preference to the scientist rather than the architectural designer, and to endow artistic incapacity with a recognition which it does not merit—fostering thereby the practical constructor to the detriment, or possible destruction, of the artist. This policy may appear to have its advantages in engineering, but it has no place in architecture, and the occurrence of such a result would be deplorable.

I also am much afraid that—as was suggested in Mr. Ernest J. Dixon's instructive letter—architects generally are profoundly indifferent to the recent developments with regard to this matter, and that even the newly-admitted Licentiates do not appreciate, to any great extent, their essential connexion with a registration scheme. Even the breach of faith, which has resulted in the time for the admission of the latter being extended, may not eventually prove to advance the cause intended. In the circumstances one may perhaps be pardoned for hoping that it will not. The whole affair seems in a perfectly hopeless muddle, and the indifference of the general bulk of Institute members is, therefore, the more regrettable.

Mr. Middleton asks for discussion and suggestions (though, one would think, at a somewhat late stage in the proceedings), and he is assured of sympathy with this request from many who have contended therefore since the Institute's proposals first came forward. What one would like to suggest—and emphasise very seriously—is that an obvious preliminary to any further action would be the taking of steps to ascertain whether the registration of architects is really desired before proceeding to discuss its practical possibilities in detail. Such a course might tend to clear the air somewhat, and perhaps remove misconceptions at present existing on the question. But any alteration in the conditions of, or composition of, Institute membership I myself regard as both improper and inadmissible, and outside the registration question altogether.

I trust, sir, that in the interests of fair play—which you have so generously advocated by permitting this discussion in your journal—you may find it possible to support such a proposal. One may surmise that the final end of this matter is not yet reached, though perhaps the time may have arrived to seek a settlement one way or another. This, however, will certainly not be possible until the views of the general body of the architects of this country have been given some encouragement and opportunity for expression.

It seems almost pitiful, at a time like this, that those Associate members of the Institute who feel real concern at the recent turn of affairs should have to look in vain for any definite support or leading from senior members of the profession who might have been expected to assist them in securing the conduct of this important question on just and proper lines.

FREDK. R. HIORNS.

Gidea Park Competition.

SIR,—In the article on Gidea Park house and cottage competition in your issue of June 9 the writer pleads the cause of "complete organic structure" in the expression of domestic architecture. If I understand him, it is a cause every trained architect has at heart. He says "the tendency of domestic work seems entirely opposed to straightforward expression," and illustrates this sweeping indictment by reference to the work at Gidea Park by Mr. East, Mr. Longden, and myself. The only basis for this statement appears to be the writer's objection to the coupling together of two or more windows lighting rooms, offices, and stairs, joining together units of the plan so that they may be taken to express only a single unit on the elevation. There may be some objection to this treatment where there is no indication externally of a break or breaks in the continuity of the window. Is this, however, the case? In my own design the divisions in the planning are clearly marked by mullions three times the width of the ordinary mullions, and the division by a 9-in. wood mullion is preferable, on practical and also on æsthetic grounds, to a narrow brick pier showing between two separate window-frames.

The writer's statement that there is no precedent for this treatment among the masterpieces of English architecture is very misleading. It is correct only in so far that the great periods of English architecture are innocent of bathrooms and water-closets; it is incorrect in so far that the rooms used for different purposes, such, for instance, as stairs and bedrooms, were lighted by continuous windows divided only by extra large mullions—*e.g.*, Speke Hall, Grey Friars, Coventry, etc. It is difficult to think of any architect well known for domestic work who has *not* at one time or another grouped his windows in this way—*e.g.*, "Marsh Court," Hants; "Fouracre," Winchfield.

It is surely a matter of taste whether or not the water-closet should be readily detected from the road or garden!

W. CURTIS GREEN.

*** We do not wish to do Mr. Curtis Green any injustice, and we are sure he will forgive us if we are not quite accurate when we say that we cannot help feeling that he has been more interested in our remarks as they affect his own design than as they affect the general principles involved—which chiefly interests us. We feel he has not quite understood us. If he will give us the satisfaction of reading our remarks again he will see that we said "the tendency of domestic work seems entirely opposed to straightforward expression *on this point*, judging by"—the instances we cited. The point we were discussing was the frank expression of the sanitary conveniences when placed in a too important or inconvenient position. We still think that, judging by these instances, the tendency is as we state, and that the few instances we cited out of many were a sufficient, and not the only, basis for the statement—sweeping or otherwise. As a further basis for a more general application of the statement we remarked in how few cases it was possible to judge the internal arrangements from the outside, to guess where the principal sitting or bed room or stair is placed. Our chief criticism of Mr. Green's design was prompted by this difficulty, and directed to the position of the units on the plan and their general misleading treatment on elevation, the trouble arising, in our opinion, from the neglect of a principle governing the position of all units, to which we had previously referred. We still think the criticism holds good, and we notice that Mr. Green does not dispute it. The precise division of the windows, which he does dispute, is not in this case a matter of great importance, as no division of a long window like this would adequately express the internal arrangements; but we notice that whereas the divisions on the planning are certainly marked by mullions three times the width of the ordinary ones, the perspective view, as illustrated, shows a continuous treatment, with perhaps a suggestion of a wider mullion in the centre, from which we inferred that a strongly-marked accentuation of the division of the window was not intended to be an essential feature of the design. We might point out also that we did not state that there is no precedent for this treatment among the masterpieces of English architecture. Had we done so no doubt it would have been "very misleading," as precedents could probably be found for most errors in one or other of them. We said that we wondered whether the same laws of artistic expression which appear to have guided the designers of the masterpieces of all the styles of the past were rightly applicable to the English domestic work of to-day—rather a different thing. The citation of instances, ancient and modern, as authorities for an error, regardless of principle, seems to support our suggestion that they are not. In which case, as we said before, criticism is wide of the mark.—ED.

INTERCOMMUNICATION COLUMN.

Flooring for Bakery.

SIR,—We should be obliged if one of your readers could inform us as to what is the best kind of flooring for a large bakery—all the floors on the ground floor—and also for steps in a similar building. We have found the flour makes nearly every kind of floor and step very slippery. BAKER.

FIFTY YEARS AGO.

From the *Builder* of June 15, 1861.

Copyright in Architectural Works.

ON this Friday (14th) Lord Palmerston will receive a deputation on the subject of the Copyright Bill brought in by the Attorney-General, the further progress of which, important as it is with reference to the 1862 Exhibition, is threatened, not because of any opposition, but through the entire stoppage of all business by the recent debates on supply and Budget matters.

Architects, as our readers are aware, are greatly opposed to the clause in the Bill which, while professing to protect "architectural works," limits the meaning of the term to "the *representation* of a design" for any building or part thereof by drawing or model; and legalises, in words, the copying of any building, or part of a building, so soon as it is erected, and re-executing it without the consent of the designer. We have pointed out this contemplated injustice again and again. A committee appointed by the Roya! Institute of British Architects to consider the subject met late on Monday night last, and agreed on a petition to be presented immediately to the Commons, similar in prayer to one presented by them some months ago to the Lords. It was further understood that they would take such steps as were available towards stopping the Bill altogether if the clause in question were not amended.

EDITORIAL SUMMARY.

The leading article is entitled "The Architectural Sense," dealing with some of the qualities and conditions that should be or are present in the mind of the true architect.

The second article (p. 736) deals with the St. Paul's Bridge controversy.

Notes (p. 737) include: "Fishmongers' Hall"; "The Pushful Architect"; "Memorial to King Edward VII."; "The *Times* at the Royal Academy"; "Gidea Park Houses."

"Building Methods in Egypt" was the title of a paper, by Mr. Ernest Richmond, read before the Royal Institute of British Architects on Monday, and an abstract of which appears on p. 738.

An illustrated article on Mr. E. L. Masqueray, New York and St. Paul, appears on p. 740, under the heading, "Contemporary Architects and Their Work."

The first summer visit of the Architectural Association took place on June 10, to a house by Mr. E. L. Lutyens on the borders of Burnham Beeches. Some notes on the house appear on p. 745.

In our Correspondence Columns (p. 748) will be found letters on "Decay in Stone"; "Unity in the Architectural Profession"; "Crittall Manufacturing Company *v.* London County Council"; "Gidea Park Competition."

The Monthly Historical Review (p. 751) contains articles on: "The Mosque of Sultan Hassan"; "Exhibitions at Rome in 1911"; "Buckinghamshire House"; and Notes.

The Building Trade Section (p. 757) includes: "Scaffold Cords and Ties"; "Mason's Stair Tread"; "Projected New Buildings in the Provinces," etc.

An illustrated review of Messrs. Thomas Garner and Arthur Stratton's book on "The Domestic Architecture of England During the Tudor Period" appears on p. 760.

MEETINGS.

SATURDAY, JUNE 17.

Manchester Society of Architects.—Visit to Adlington Hall.

MONDAY, JUNE 19.

The Surveyors' Institution.—A special meeting, when Mr. J. H. Sabin will open a discussion on the question the position of tenant farmers in England and Wales on the occasion of any change in the ownership of their holdings, whether by reason of the death of the landlord, the sale of the land, or otherwise. 8 p.m.

THURSDAY, JUNE 22.

Society of Antiquaries.—8.30 p.m.

MANCHESTER LIBRARY AND ART GALLERIES.

PARTICULARS of this important competition were advertised in our issue of January 13, and an article, with illustrations of the site, appeared the following week. The competition closed on May 1, and Professor Reginald Blomfield, A.R.A., has now made his award after carefully considering the designs in conjunction with Mr. Price, the City Architect.

It appears that forty-eight of the designs were rejected as quite unsuitable. Twenty-seven were selected for further consideration, and ten designs were finally chosen, viz.:—

Nos. 14, 32, 87, 110, 126, 129, 144, 150, 167, 179.

Area.—In regard to these selected designs, Mr. Blomfield reports (1) that the whole ten are within the specified area except No. 87, whose 1-16-in. scale plans exceed it, though his block plan is figured within it.

No. 126 exceeds by 50 yds.

No. 144 exceeds by 50 yds.

No. 179 exceeds by 30 yds.

These are so near that they may be taken to comply with the conditions of specified area.

Accommodation.—In regard to accommodation, Nos. 14 and 32 provide generally what is required.

No. 87 is short in the sculpture. Nos. 110 and 126 are short in various particulars. The latter (viz., 126 in particular) has not followed the requirements with any closeness, his deficiency being estimated at about 9 per cent. As will be seen, however, from the estimated cost, his building works out at a lower figure than that of the other selected competitors.

No. 129 is short in several particulars, notably in the sculpture, textiles, furniture, metals, ivories, and potteries, and in excess in Old Manchester collection and refreshment-room.

No. 144 is short in bookroom and other particulars.

No. 150 complies fairly with the requirements, and it will be noted that his cost works out at a low figure. In Nos. 167 and 179 the conditions are met in an ample and satisfactory manner.

Cost.—In regard to cost, as the competitors varied in their estimates of the figure at which the work could be done, and in some cases did not state the figure on which their calculations were based, it was considered best to have the cost of the designs of the selected competitors worked out at a uniform ratio of 1s. a cubic foot, which is, in the assessor's opinion, the very lowest at which the work can be done.

Mr. Price has had the cost worked out on this basis, with the following results:—

No. 14	£247,314
„ 32	244,677
„ 87	255,700
„ 110	238,540
„ 126	201,.00
„ 129	241,000
„ 144	248,500
„ 150	207,000
„ 167	222,100
„ 179	242,000

These designs are unequal in merit, and some difficulty was found in selecting a 10th design that was adequate and complied reasonably with the conditions. The problem set was difficult and complicated, and some of the designs sent in met it in a skilful and well-considered manner.

The assessor suggests the following further instructions to the authors of the ten selected designs:—

(1) The complete lighting of the reading-rooms is of the utmost importance. Where areas for light are provided the amount of light obtainable should be carefully tested.

(2) The cataloguing-room and Greenwood library should be in close touch, and not too far away from the stacks.

(3) The magazine and technical libraries, and Parliamentary papers should have quick access from the stacks.

(4) It is desirable that the principal entrance to the reading-room should be by the card catalogues.

(5) It is important that there should be free circulation through all galleries—that is, galleries should not have dead ends, from which visitors would have to retrace their steps to the entrance. There should be a free way all round.

(6) Adequate lighting to the sculpture galleries must be provided, and care taken that the light is not intercepted by the overhang of balconies.

(7) Passenger lifts must be provided, as well as stairs, and abundant facilities of access and egress provided.

(8) The picture-galleries should not be too wide.

(9) It must be clearly understood that the total cost must on no account exceed 250,000*l.*; and any design which, in the opinion of the assessors, will exceed that sum will be disqualified. The cost must be carefully calculated at an adequate figure. Ornament should be used with a sparing hand, and ornamental features, unless essential to the design, should be avoided.

(10) The requirements stated as to area and accommodation should be strictly complied with.

Each of the ten competitors will receive 100 guineas towards the expense of preparing his final design.

CHANTREY BEQUEST.

We understand that the Trustees have purchased Mr. W. Reynolds-Stephens' bronze group of "A Royal Game"—Queen Elizabeth and Philip II. of Spain playing at chess—symbolical of the contest between England and Spain for the rule of the seas. The work is contributed to the current Royal Academy Exhibition.

ILLUSTRATIONS.

Works by Mr. E. L. Masqueray.

PARTICULARS of the buildings erected by Mr. Masqueray will be found on p. 740, under the title of "Contemporary Architects and their Work."

The Regent-street Polytechnic Rebuilding.

THE Polytechnic, Regent-street, is now being rebuilt at a cost of 90,000*l.* from the designs and under the direction of Mr. George A. Mitchell, A.R.I.B.A., architect. The façade, which is part of a general scheme projected by the estate, is designed by Mr. Frank T. Verity, F.R.I.B.A.

The proposal of the governors and subscribers that the 50,000*l.* needed to complete the building fund should be a memorial to his Majesty King Edward VII. has received the approval of his Majesty the King.

The Polytechnic was founded by Mr. Quintin Hogg in 1882, and the present scheme is a development of work previously carried on by him for the educational, physical, and religious improvement of young men. The work was located in the premises of the old Polytechnic Institution, but the great increase in the magnitude of this work rendered the old buildings inadequate, and it was decided to rebuild certain portions of the structure both to increase the accommodation and to bring the facilities for the educational work more up-to-date. The building contains a large and a small concert-hall, gymnasium, swimming-bath, restaurant, rifle-range, social-room, library, reading-room, etc., with club-rooms for the various sections connected with the social side of the work, also a large number of classrooms, with chemical, physical, electrical, mechanical, mathematical, and testing laboratories. It also includes accommodation for art, architectural engineering, electrical engineering, photographic, technical and secondary schools, with fully equipped carpentry, brickwork, plumbing, plastering, and engineering workshops. The new building consists of a block with a frontage to Regent-street of nine stories, including two basements, the ground and six other floors, also the reading-room block consisting of three stories. The gymnasium and the basements under the concert-hall have been reconstructed. The foundations of the front block consist of a ferro-concrete grillage, with steel grillages under the stanchions. The structure is steel framed with ferro-concrete floor slabs averaging 21 ft. by 7 ft. 6 in. The vaults under the pavement and retaining wall, 26 ft. high, also the staircases, are of ferro-concrete on the Hennebique system. The building from the top of the concrete grillage to the roof is 130 ft. in height. The heating will be by low-pressure hot water with a forced circulation. The lower portion of the premises, also the concert-hall, gymnasium, and reading-room block, will be ventilated by a combination of the plenum and extraction systems. The heating and ventilation are being carried out by Messrs. Strode & Co. There will be two electric passenger lifts and one goods lift by Messrs. Waygood & Co. The building will be lit by electricity throughout. The constructional steelwork is by Messrs. Dorman, Long, & Co. The general contractors are Messrs. Holloway Bros., Ltd.

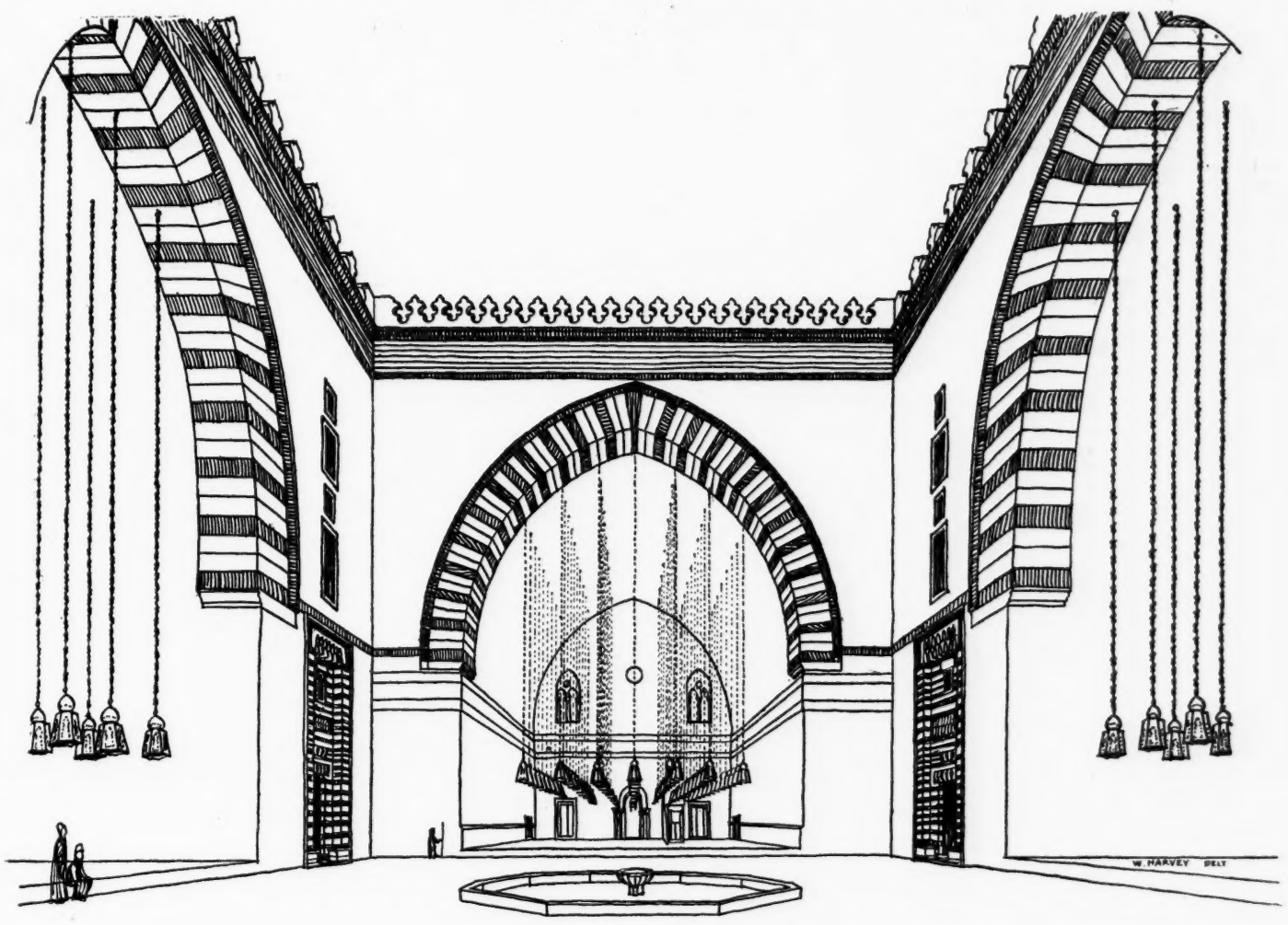
HOUSE AT GORSE HILL, WOKING.

With reference to the description of this building in our last issue (p. 716), we hear from the architect, Mr. Edward Warren, that the roof was not covered with Hazelwood tiles, but with tiles supplied by the "Nyewood" Brick and Tile Works.

A CORONATION GIFT.

An armoire, designed by the Head Master of the School of Art Wood Carving and carved by the students, will be presented by the School to the King and Queen on the occasion of their Majesties' Coronation. The wood used is French walnut, and the design is carried out on the lines of the transitional Gothic of the "François Premier" period. The details are modern, but treated somewhat severely in accordance with the style. The cabinet stands 4 ft. 6 in. high, and is 2 ft. 9 in. wide. The door, which forms the centre panel, is richly carved with the Royal Arms, the Rose, the Thistle, and the Shamrock.

MONTHLY HISTORICAL REVIEW.



COVRTYARD OF MOSQVE OF SVLTAN HASSAN: PERSPECTIVE VIEW LOOKING EAST.

THE MOSQUE OF SULTAN HASSAN, CAIRO.

By WILLIAM HARVEY.

THE mosque of Sultan Hassan stands near the citadel on the eastern side of Cairo, and consists of three blocks of buildings enclosed by a wall rising 100 ft. and more from the ground to the cornice with scarcely a moulding or architectural feature to interfere with its majestic breadth.

The main block, a great rectangular mass of building comprises the mosque proper; cross-shaped in plan; and four houses full of students' cells, each house filling a corner of the rectangle, and abutting the great barrel vaults which roof the arms of the cross. The central space of 116 ft. × 106 ft. is open to the sky, and forms the mosque courtyard surrounded by towering walls and gigantic arches.

To the eastward of this block stands the square chamber roofed by a dome and pendentives above the founder's tomb, and to the west are the entrance porch and vestibule, and the passages giving access to the central courtyard. The exterior of the mosque is most impressive when seen from the street on to which its main entrance fronts, the vast wall surface rises majestically from the warm shadow at the base to where the cornice of out-corbelled stalactite niches and the trefoil battlements cut against the blazing sky. The street at the base, although one of the widest in the city, has something of the appearance of a deep cleft under the clifflike wall.

Although the view from the east, where the ground is clear of houses is less favourable, and the effect of the wall is to some extent neutralised by the broken outline of the dome with its curious little buttresses and by the intrusion of the smaller minaret into the composition, the same sense of gigantic scale and mass is produced. From this point of view the whole outline of the building being seen, the proportion of its parts provoke criticism, and at first sight withdraw the attention from the simple mass which is one of the chief characteristics of the work. Beside this the spectator is almost certain to compare its contour with the dainty and perfectly balanced massing of wall, dome and minaret presented by the later Saracenic mosques, such as the exquisitely graceful "Tomb mosque of Kaït Bey," built rather more than a century later.

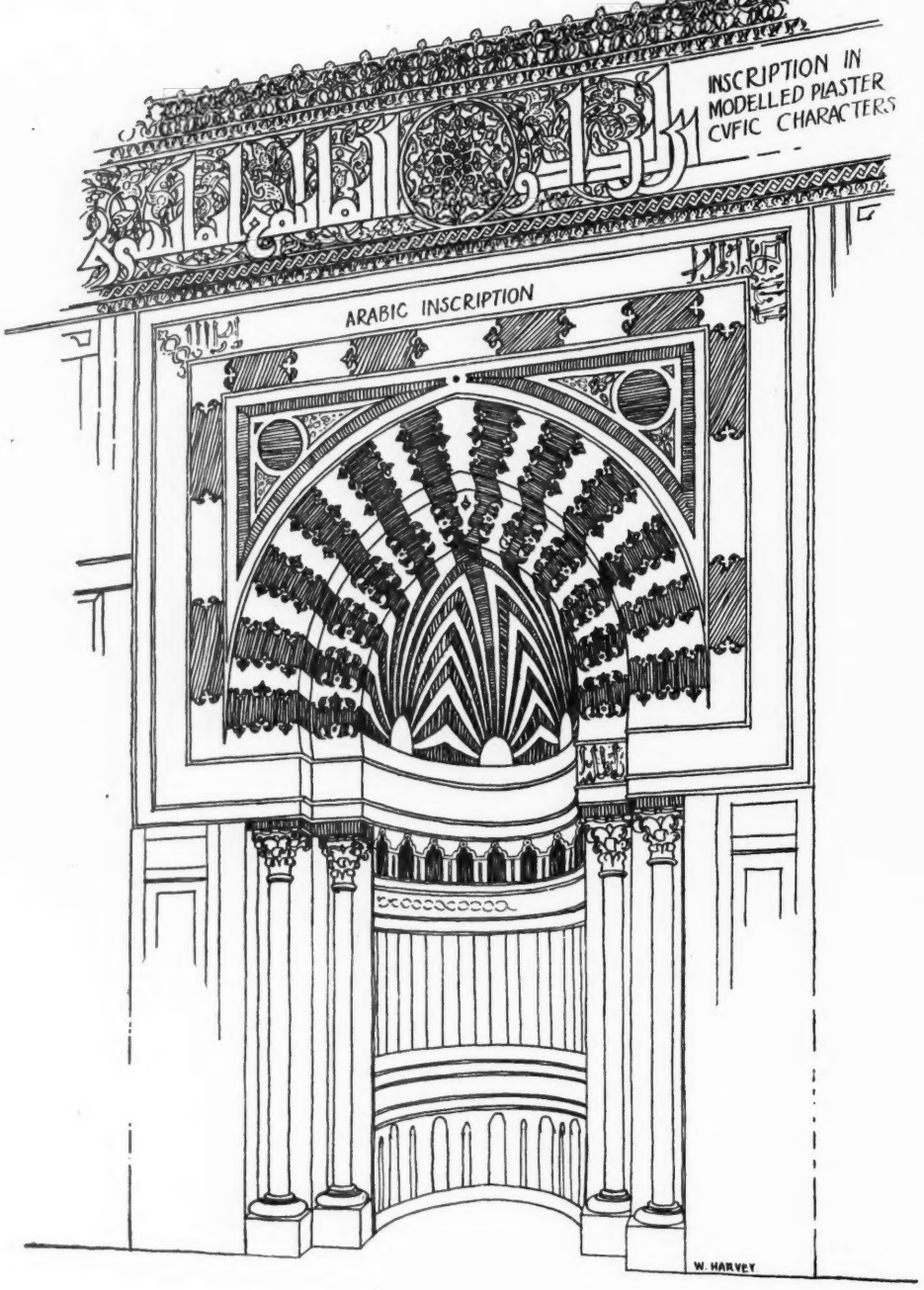
It is a matter of history that the intention of the Sultan and his architects was to produce grandeur rather than grace; and on a prolonged study the sense of the grandeur of the work becomes more and more pronounced. The solid dignity of the building eminently fits it for its position as the parent type from which lighter and more dainty works were gradually evolved.

From the street to the north a flight of marble steps leads up to a platform projecting in front of the recessed and niche-headed porch which rises to practically the whole height of the wall, with much the effect of a cavern mouth in a smooth and vertical cliff. The top of the porch is formed by a slightly pointed semi-dome with vertical flutings carved in the surface of the stonework. Below the semi-dome twelve courses of stonework carved with the stalactite niches and brackets that form the typical ornament of the style connect the semicircular base of the niche head and the rectangular recess below. At this early period the head of each niche is formed by curved lines, and each niche rises through the height of a whole course of stonework.

In more modern work the niche often became a mere surface decoration, a series of several tiers of them being carved in a single block. Behind the recessed portal is an ante-chamber or vestibule roofed with a dome on pendentives of similar stalactite work, and from this vestibule a winding passage with masonry walls and vaulting leads to the interior court which forms the mosque proper and is the most extraordinary part of the building. An impression of the vast scale of the arch and barrel vault over the great eastern transept is gained through the doorway forming the entrance from the vaulted passage to the court.

Framed below the square lintel of the doorway is a view of a small fraction (some few voissoirs) of a gigantic arch in the opposite wall of the court. A wall of which the top cannot be seen and whose breadth is only broken by one band of ornament in modelled plaster. The courtyard is designed on a colossal scale. In effect it is practically a cubical well 111 ft. deep in each side of which an arch of red and cream-coloured stones rises to the height of 90 ft. Each arch forming the face of a barrel vaulted recess or transept. Of the four transepts the three of the north, west, and south are of approximately equal dimensions.

The eastern transept is much wider and



MECCA NICHE . MOSQVE OF SVLTAN HASSAN: CAIRO

longer than the others, though its arch is of practically the same altitude.

It is sometimes stated that this arch is considerably higher than the others, a statement obviously inexact considering that the level courses of masonry at the top of the courtyard wall allow of comparison without even the necessity of actual measurement.

The form of the great eastern arch differs from the others in being much less stilted although its outline is exactly similar to the upper parts of the other three transept arches, each curve being a segment of a single circle whose centre lies on a point distant one-third of the span from the opposite springing. The appearance of the arches is, of course, very different, those to the three smaller transepts being stilted almost 20 ft. on a vertical wall, while the great arch is only stilted the height of one course above the corbel. This lowest course continues the curve of the upper part of the arch, and makes it horseshoe shaped, but to so slight an extent as to be barely noticeable.

The coloured voussoirs of the arches are arranged in order, beginning with a red one at the springing, then two light stones and another red one, the arch finishing at the top with a red keystone.

It is interesting to note that in the great arch there is an unequal number of voussoirs on each side, and in neither side is the spacing of the coloured stones, above-mentioned, strictly adhered to.

On the left-hand side three red voussoirs are only separated from each other by one light stone between each, and on the right-hand side only two are so arranged.

As the depth of the arch ring is 7 ft., and the adjusting of these stones must obviously have been a matter of great labour, it seems strange to western minds that such carelessness should have been shown in the setting out. This carelessness is, however, eminently characteristic of oriental work, not less in its best examples than in the rudest hut.

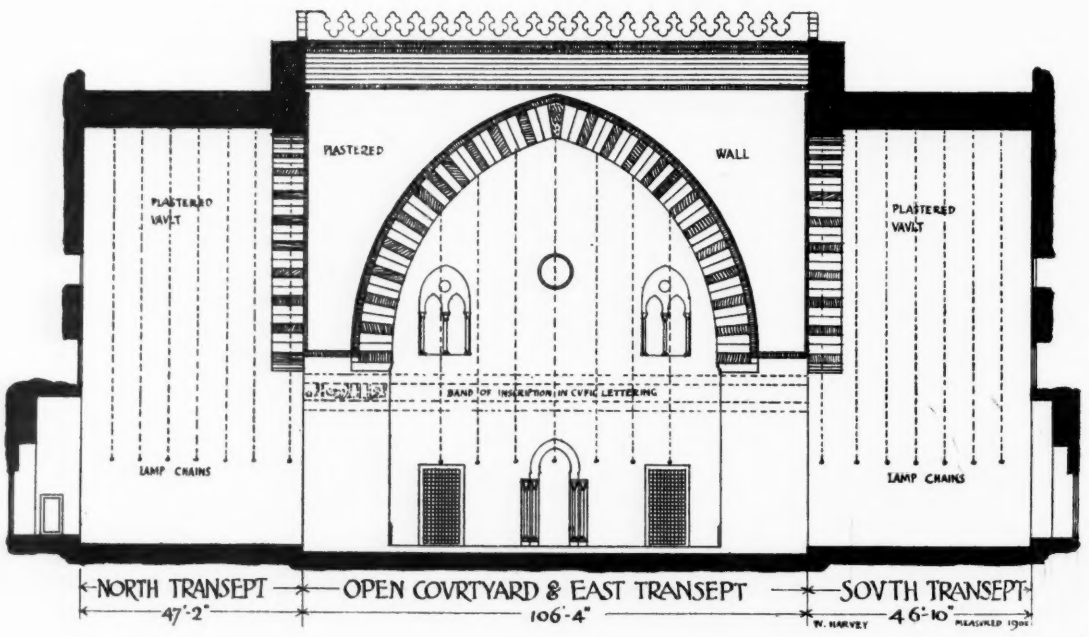
The architect has concentrated his attention on the main proportions and contour, and has been indifferent to mechanical accuracy in all minor and unimportant details, the exact reverse of modern practice.

Each of the four arches has an ogee label moulding in red stone starting from just above the springing; the wall above being covered with plaster in each case.

The top of the courtyard wall is crowned with a row of trefoil cresting ornament. about 6 ft. high, above a cyma reversa moulding similar to the hood mould over the four arches.

Beside the arches, the other noticeable features of the courtyard are a series of six doorways sunk in rectangular recesses in the walls, and ornamented with black and white marble, each recess is about 40 ft. high, and is finished at the top with two courses of stalactite ornament. The doorways are 13 ft. 9½ in. high and 5 ft. 9½ in. wide in the clear. The opening is spanned by a flat arch or composite lintel of black and white marble voussoirs elaborately joggled together in a beautiful and intricate manner.

The keystone is joggled on the soffit as well as on the face, the stone having necessarily been pushed into position in a



slantwise direction. In all probability the elaborately-shaped joggles only fit tightly for the fraction of an inch back from the surface, the rest of the joint being cut back and filled in with spalls of stone and mortar. Surrounding this lintel is a band of mosaic, composed of small tiles and a kind of red stone arranged in an elaborate geometrical pattern, the mosaic being separated from the voussoirs by a marble moulding consisting of a torus, a cavetto, and three fillets.

The several doorways differ slightly in the patterns of the marble voussoirs, and surrounding mosaic ornament and in the little corbel under the lintel at each end of the span. Some of the corbels being ornamented with small stalactites instead of the moulding above-mentioned being returned into the door opening. Above the mosaic ornament, over the lintel is a relieving arch also of black and white marble voussoirs interlaced with similar joggles to those in the lintel. A small segmental space beneath this arch relieves the lintel of pressure from the weight of the wall above, a feature typical of all mature Saracenic work, and one which is used in native construction in Palestine to the present day. In many cases this space is left entirely vacant, so that it is sometimes possible to see a line of light between the lintel and the arch. In this instance, however, it is filled up with a small slab of marble with a scroll incised in its surface.

The two doors in the western side of the courtyard differ slightly from the other four, there being six courses of stalactite ornament at the top of the portal instead of two in the other cases.

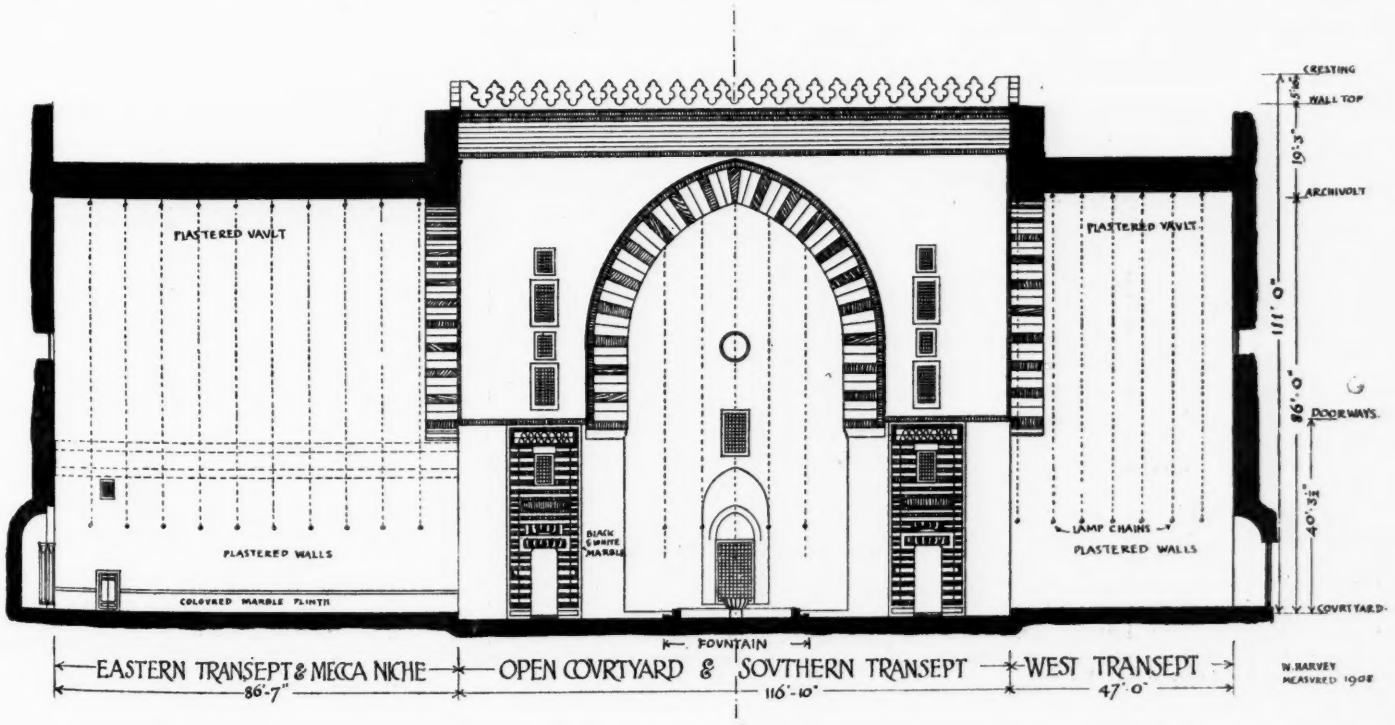
Above the six portals are windows with wooden frames and grilles of round bronze bars, which light the cells, formerly given up to the use of students, but in 1908 partially filled up with refuse, the mosque having been disused and fallen into decay.

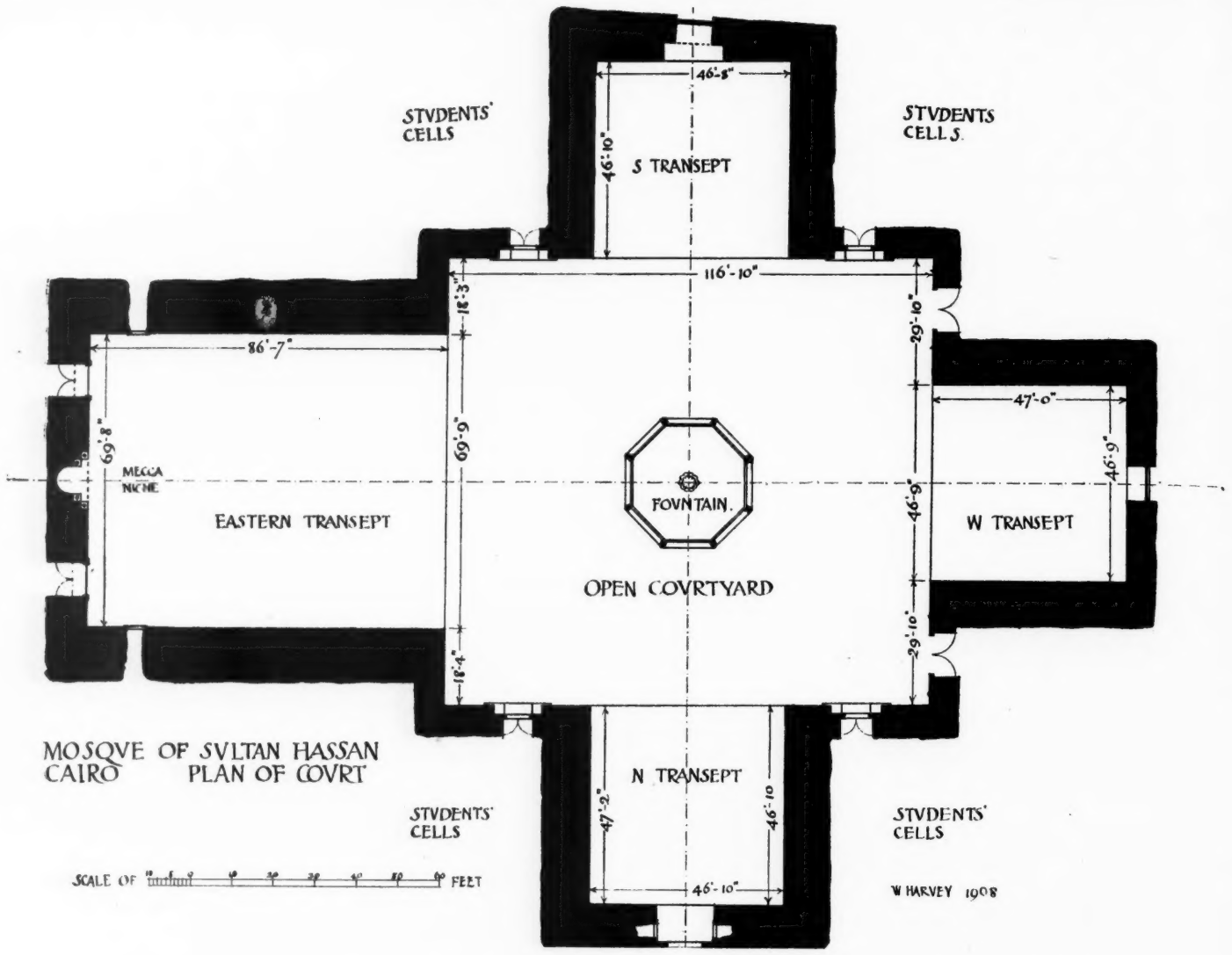
The centre of the court is occupied by a fountain basin, octagonal in plan, about 31 ft. diameter, above which stands a domed construction of wood and plaster upon eight small marble columns. The structure serves practically no purpose as the shadow from the great walls of the court is sufficient protection from the heat of the sun, the intrusion of this ungainly monument into the courtyard is very unfortunate, as it detracts greatly from the scale of the building, blocking the view from almost every point. It is omitted from the elevation and perspective views accompanying this description. Although in this instance the canopy above the fountain is unsightly, it is quite possible for such a structure to possess very great grace and beauty, the little tile-covered erection known as "The Dome of the Chain" in the "Temple Area" at Jerusalem being as charming and appropriate an addition to the "Dome of the Rock" (Mosque of Omar) as this canopy is the reverse.

MOSQVE OF SVLTAN HASSAN FROM THE EAST.

The floor of the courtyard is covered with fragments of marble mosaics of different patterns more interesting for the colour they introduce into the scheme than for their value as pavement designs.

The great eastern transept, which contains the Mecca niche, has more ornament than the other three. Its two long sides are decorated with a plinth 4 ft. high, projecting some 6 in. from the wall, and covered with coloured marble slabs. The eastern wall is lined with coloured marble to the height of 28 ft. The Mecca niche and its ornamental framing of marble rising to this height. Above this level a band of modelled plaster in low relief (7½ ft. deep) runs round all the three sides of the transept and returns along the face of the courtyard wall, just below the springing of the great arch. This ornament includes an inscription in Cufic characters, with a very beautiful Arabesque scrollwork design as background. The whole composition, although very elaborate and rich, is extremely dignified in effect, the straight lines of the lettering contrasting





MOSQVE OF SVLTAN HASSAN
CAIRO PLAN OF COVRT

charmingly with the much finer curved lines of the scroll. The Mecca niche is lined with coloured marble in vertical strips, horizontal bands of mosaic being carried round at two points. The head of the niche is also lined with marble of different colours, arranged in fan-shaped patterns from three centres, the dark and white lines continuing, the dark or light voussoirs of the arch forming the face of the niche. The voussoirs are intricately joggled together, but in this case the marble surface is only a veneer similar to the rest of the marble wall lining.

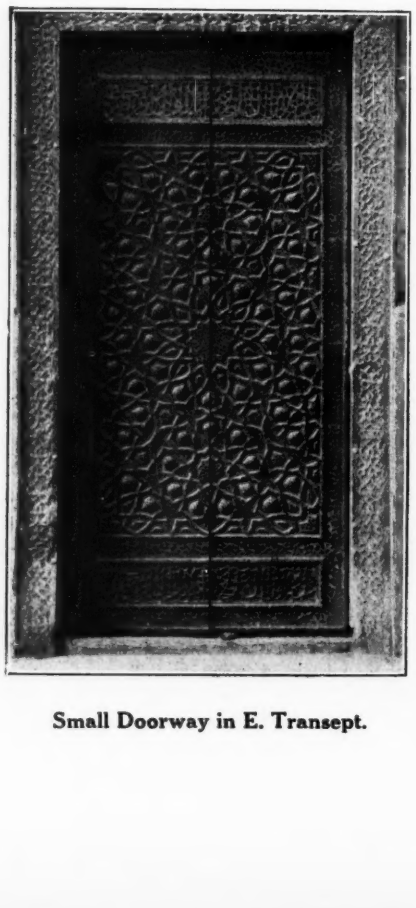
A band of Arabic inscription is carried around the niche at the springing of its arch, and returning about the face of the wall is carried up and along the top over the arch, making a sort of frame to the head of the niche. To the right-hand side of the niche stands the mimbar (pulpit), with its flight of steps projecting out from the wall towards the courtyard, its entrance is covered by two elaborately ornamented doors.

The highest step (on which the preacher sits) is roofed by a little domed canopy supported on small marble shafts, the height of the whole erection reaching up to the middle of the Cufic inscription (about 31 ft.)

Immediately in front of the Mecca niche is a platform supported on small piers and columns of marble, upon which the sacred books are kept. A curious feature of this platform is that at the angles of the two piers, forming the ends of the west front are small columns built up of carefully-fitted pieces of marble of different colours forming a zigzag ornament upon the shafts; the columns sounding hollow when tapped with the finger.

In the eastern wall to the right and left of the Mecca niche are two doorways about 16 ft. high, fitted with superb bronze doors, decorated in arabesques and geometrical patterns with inlays of gold and silver of the finest workmanship imaginable, these doors are protected by bronze grilles similar to those of the windows at the face of the wall 3 or 4 ft. in front of the doors.

In the north and south walls near the eastern end of this transept are two little doors about 7 ft. high, covered with sheets of bronze in geometrical designs, but without inlays of precious metals. Although insignificant compared with the great doors just mentioned, they are exquisite pieces of workmanship, the frames are of wood without mouldings, but with an arabesque pattern with a sunk background carved in the face. Two small windows with bronze grills are placed in the wall above these doors and three windows with tracery of pierced plaster work connect the end of the eastern transept with the "tomb chamber" beyond. A great number of



Small Doorway in E. Transept.

chains for hanging lamps complete the list of the features of this extraordinary building, and give to the great barrel vaulted transepts an appearance of tremendous scale and spaciousness, that their size alone might fail to convey. The building is singular in that the attempt of its architect to create an impression of overpowering bulk and mass has been, in the fullest measure, successful.

Its walls are formed of blocks stolen from the sides of the Great Pyramid, and its whole mass is of course almost trifling in comparison with that enormous mound, yet of the two constructions the "Mosque of Sultan Hassan" conveys far more forcibly the sense of the majestic in architecture.

The vertical walls and great cornice of the exterior naturally exhibit their mass more completely than the sloping sides of the pyramid, and the solemn shadows in the barrel vaulted transepts of the interior court are more calculated to raise feelings of awe than the yellow mass of the Pyramid, dwarfed as it is by its comparison with the limitless stretch of desert, and by the dazzling glare of the sun.

Two influences add to the dignity of the mosque, the effect of carefully subordinated ornament giving scale to the whole, and human interest compelling keener attention from the spectator than that excited by more formal works of antiquity, however colossal.

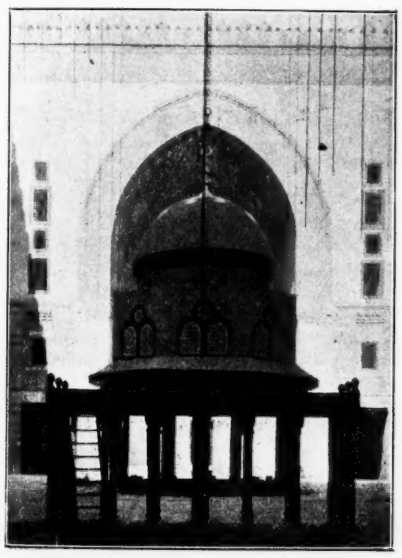
In the interior of the "Mosque of Sultan Hassan" detail on the minute scale of jeweller's work in gold, silver, bronze, and mosaic forms an important part of the whole design. As already mentioned, the slender bronze lamp chains exhibit the noble largeness of the sweeping surfaces of the transept vaults, which would not otherwise be so readily recognised. In the portals in the courtyard walls, the delicate inlays above the lintels perform a similar office. Subordination of ornament is a characteristic of Saracenic style; minute inlays of gold form central ornaments upon larger plates

of bronze arranged to form a geometrical surface decoration covering a door, wide borders surround the geometrical pattern and lead the eye to grasp the whole area of the door as one unit, and permit of its comparison with the surrounding frame of coloured marbles and the superstructure of the portal; the whole of which enclosed by framing mouldings bears a readily observed proportion to the main wall surface.

The human interest of the building is partly due to conscious thought, in the arrangement of its detail, as just described, and partly to accident, such as in the unequal spacing of the coloured voussoirs of the main arch, and slight irregularities in the sides of almost symmetrical features, structural or ornamental.

The style is eminently a constructive one, the joggling of arched stones, the use of coloured voussoirs, and other evidences of the builders' craft call attention to the fact that the building is reared by man. In other buildings where colossal masonry forms part of the design—as at Baalbec—or where the style of decoration is grandiose, as at St. Peter's (Rome) the largeness of the buildings themselves is not easily apparent.

The gigantic stones at Baalbec impress wonder, but to such an extent that the spectator is lost in convincing himself that these things were placed in position by



Courtyard of Mosque, looking West.

human agency, and has not the power to associate them with the architectural scheme as a whole. St. Peter's, too, produces a similar effect, though in this case the loss of scale is caused partly by the introduction of colossal human figures into the decoration.

In sacrificing the interest of the sculptured representation of the human figure, Saracenic architecture lost less than it gained in the evolution of a pure style based upon substantial construction which is expressed in all the features of the building, and in the case of the subject of this essay has resulted in the production of a work of kingly majesty.

THE EXHIBITIONS AT ROME IN 1911.—II.

THE EXHIBITION OF RETROSPECTIVE ART AT CASTEL S. ANGELO.

THE so-called Exhibition of Retrospective Art (Mostra dell' Arte Retrospettiva) occupies the Castel S. Angelo, itself one of the most interesting and historic buildings of Rome. It was built, with the bridge leading to it, by the Emperor Hadrian in A.D. 136, for himself and his successors, the ashes of all of whom, until the time of Caracalla, who died some eighty years later, were placed here. It was converted into a fortress by Aurelian, or by Honorius; and when the Goths, under Vitiges, besieged Rome in A.D. 537, it was able to repel their attacks, and became the citadel of Rome henceforth, being especially important in the Middle Ages. From the end of the XIVth century onwards, it was held by the Popes, who had already connected it with the Vatican by a covered passage (called the *passetto*) running along the top of the wall of Leo IV. But the Popes used it also as a prison and as a summer residence, and the Papal apartments, embellished by the Popes from Alexander VI. to Paul III., contain some of the most beautiful and interesting examples of Renaissance fresco decoration that Rome has to show.

Such a building is in itself an object of great interest, and a fitting seat for such an exhibition, and the contents, though unequal in merit, are not unworthy of it. They are of a very varied nature, and it will, perhaps, be convenient to the intending visitor, or to one who knows the building, to describe them in their local order, rather than to attempt to make a logical division which does not in reality exist.

The exhibition is entered, then, not by the great gate in front of the Ponte S. Angelo, but by a new entrance to the left.

Passing through this, we find on our right, in the old fosse of the castle, a building devoted to the so-called Mostra degli Stranieri a Roma, opened by the King and Queen of Italy on May 6—considerably after the rest of the exhibition. This is a section in which an attempt has been made by the various nations of the Old and the New World to illustrate the life of their countrymen in Rome, and the influence of Rome upon them—not in its completeness, for this would be impossible, but rather to seize some of the more important elements in the contact between the Eternal City and the foreigners who have come to her through the centuries.

Thus, in the British Historical Section special attention has been devoted (1) to the life of the later Stuarts in Rome, where they were treated as the rightful rulers of our islands; (2) to the memorials and works of British architects, painters, sculptors, literary men, etc., who lived and worked, and studied in Rome, having reference to their association with it. The organisation was in the hands of a committee appointed by the Royal Commission for the Exhibition of 1911, and the members resident in Rome were his Excellency Sir Rennell Rodd, British Ambassador to his Majesty the King of Italy, Dr. Thomas Ashby, director, and Mrs. S. Arthur Strong, assistant-director, of the British School at Rome. In pursuance of the programme outlined above, one room of the three allotted to the section was devoted to portraits, records, and relics of the later Stuarts. Thus, two portraits of Prince James Francis Edward (the old Pretender) as a boy came from Rome itself—one from Prince Doria's collection, the other from the National Gallery of Ancient Art at the Palazzo Corsini; a fine painting of Prince Charles (the Young Pretender) as an oldish and disappointed man, is lent by his Highness Prince Frederick Duleep Singh; while from the National Gallery of Ireland comes a splendid picture by G. P. Pannini, representing the festivities and decorations in Piazza Navona, on November, 1729, in honour of the birth of the eldest son of Louis XV., at which the Stuart Princes were present. The same gallery also sends a portrait of Luke Wadding, founder of the Franciscan College of S. Isidore, in Rome, ascribed to Spagnoletto. The other portraits in this room are in part engravings and mezzotints, in part photographs from pictures and drawings, the originals of which it was impossible to procure for the exhibition, but Miss Emmeline Deane exhibits two large portraits of Cardinal Newman.

In the central case are documents of historical interest—the marriage contract between Prince James and his wife, Princess Clementina Sobieski, autographs of the Stuart Princes, books and engravings relating to them—also a volume containing Carlo Fontana's original drawings for the Curia Innocenziana at Monte Citorio (now the seat of the Italian Chamber of Deputies). These documents were presented to Pope Innocent XII., and, with many other documents of the kind (Fontana's drawings for the Fountain of Trevi, the harbour of Civita Vecchia, etc.), passed through the hands of Clement XI. into the private library of his nephew Cardinal Alessandro Albani, from whom they were purchased by James Adam for King George III., and now form part of the Royal Library at Windsor, from which his Majesty the King has been graciously pleased to send them for the exhibition. In the next room are other loans from the Royal collection—a series of ten sepia drawings of the carnival of 1775, by David Allan, four of which have been aquatinted by Sandby, while the rest, though drawn in reverse for this purpose, have not been published. This room also contains drawings of Roman landscape and architecture, partly by British artists, partly by foreigners, but preserved in British collections. Among the former we may note the restorations of the Temple of Fortune at Palestrina, by Hadfield, a section of S. Peter's, by Goldicutt, and the interior of S. Benedetto, at Subiaco, by Digby Wyatt, lent by the Royal Institute of British Architects; among the latter are twelve splendid original drawings by Claude, Nicolas Poussin and others, lent by the Dean and Chapter of Christ Church, Oxford. There are also numerous photographs from the coloured drawings of ancient Roman paintings made by Francesco Bartoli for Dr. Richard Topham, in the early years of the XVIIIth century, and now preserved in the library of Eton College; while a volume of original drawings of similar subjects, executed by Francesco's elder brother Pietro for Cardinal Camillo Massini, many years earlier, is exhibited by Mr. W. St. Clair Baddeley. There is, too, a selection of the more interesting XVIIth and XVIIIth century books on Rome by English writers.

The third room continues the survey of British landscape and architectural drawing and painting. Of originals we have a beautiful little picture of the Giardino del Lago, in the Villa Borghese, by William Marlow, exhibited by Mr. F. A. White, a few examples of David Roberts's watercolours, and a group of watercolours and black and white drawings made by Mr. Walter Crane in the early seventies, which are especially pleasing to the taste of Italian connoisseurs.

The treasures of the public galleries of London can, of course, only be represented by photographs; and as this was the case in the first room with the most important of the British portraits from the National Portrait Gallery, so we find a large collection of reproductions of Turner's marvellous pencil sketches of Rome and the Campagna in the National Gallery, of drawings and pictures by British artists at South Kensington, and of drawings in the Department of Prints and Drawings at the British Museum. The last group, however, forms a series of forty, which have been published as a portfolio with a text by Dr. Ashby, for the exhibition, by order of the trustees, and will thus form a permanent record; and at the same time it may be hoped that other bodies will follow the good example which has been set, and render these treasures, which cannot, it is true, be called inaccessible, better known to the British public. Other nations have dealt in various ways with the task that lay before them, France restricts herself to the Napoleonic period. One of her rooms is a reproduction of a small room used by the Empress Josephine at the Tuileries, the furniture having been sent from Fontainebleau, where it once adorned the apartments allotted to Pope Pius VII. The rooms also contain some portraits of great beauty and importance—Madame de Stael, by Mlle. Godefroy, Pauline Borghese, Mme. Capello and Napoleon himself, by David;

and a curious picture of the little King of Rome in uniform, by Isabey. There are also two fine views of Rome by Hylaire, and a collection of historical documents and relics of great interest, including the hat which Napoleon wore at Elba.

In the other sections the artistic interest predominates. Thus in the Austrian section we have works of painters, such as Romako, who have studied in Rome, and drawn their inspiration from her, but comparatively few pictures relating directly to Rome and the Campagna. There are, on the other hand, the plates of a set of etchings by Koch, of scenes in Rome, and some drawings of Roman scenes and costumes.

The Spanish section is less strong than it might be, but has an effective carnival scene by Beullieure, and some beautiful little etchings by Haes.

The organisers of the Dutch section, on the other hand, have kept very close to the subject, and confine themselves almost entirely to drawings and photographic reproductions of drawings (so good as to be hardly distinguishable from the originals) of views of Rome by artists of the late XVIth and early XVIIth centuries—Gerard Ter Borch, Paul Bril, Willem Van Nieuwlandt, the Breughels, and others.

The collection, though small, is very choice, and there are a few original pictures—three views of Rome in the early XVIIIth century, by Van Wittel, who is better known in Rome by his Italianised name, Vanvitelli, and whose additions to the church of S. Maria degli Angeli, at the Baths of Diocletian, are even now being actively demolished. But there is no doubt that the finest works of his genius are the powerful drawings, hitherto quite unknown, which the Biblioteca Vittorio Emanuele has contributed to the section of Roman topography, with which we shall have occasion to deal later. Sweden exhibits a fine portrait of Queen Christina (one might have wished for other relics and memorials of her residence in Rome in the XVIIth century), and an amusing series of caricatures of artists of other nations by Lindstrom, made in 1830.

Denmark has a large and important collection of pictures of Rome and Italy: and reproductions of sculptures by Thorwaldsen—his group of the Three Graces and several medallions.

Germany has a considerable collection of pictures of Rome and the Campagna, by German artists, especially some fine pictures by Koch and some drawings by Philip Hackert and others; there is also a copy of Tischbein's Goethe in the Roman Campagna, and other memorials of Goethe's sojourn in Rome; and there are several records of the German artists' festival in the quarries of Cervara by the Anio, now a thing of the past. Norway can hardly yet be judged, inasmuch as the objects from Christiania have not yet arrived.

Turning to the other sections, housed in part of a separate building (not yet completed) we find some fine pictures—a Piazza Montanara, by Philippet, and a Piazza Navona, by Hennebicq.

Hungary, the only country that has as yet prepared a catalogue, has an interesting series of portraits and medals of Hungarians associated with Rome, beginning with XVIth-century imaginary portraits of Attila, and a few landscapes and drawings of Rome. The United States have not found it possible to take part, but some of the States of South America—Uruguay and others—have small sections illustrating their connexion with Rome.

BUCKINGHAMSHIRE HOUSE, ST. JAMES'S PARK.

IN the dispersal a few days ago of Sir Thomas Phillipps' collection of MSS. and autograph letters, were sold abstracts of Sir Charles Sheffield's title to land in the mulberry-garden attached to Buckingham House, and of the assignment of the garden and house to George III., with other original papers relating thereto. Buckingham—more correctly, Buckinghamshire—House was built in 1703 from the designs of Captain Wynde, or Wynne, pupil and executor of Inigo Jones, upon the site of Arlington, formerly Goring, House, the town residence of George and his son, Charles, Goring, Earls of Norwich, which, as Evelyn tells us, was burned on September 21, 1674. Goring House abutted on the south-east part of the mulberry-garden (now portion of the palace grounds) of 4 acres, taken out of St. James's Park by James I. for the planting of mulberry-trees and the cultivation of silkworms. Lord Arlington had taken Goring House in 1666; by a conveyance dated October 22, 1681, he buys the site of his house and the adjoining grounds from Sir Thomas Grosvenor, Bart., for 3,500*l*. His property there passed to his daughter and heir, Isabella, Duchess of Grafton, who sold it to John (Sheffield), Duke of the county of Buckingham and of Normanby, who died on February 24, 1721. John's widow, Katharine, a daughter of James II., outlived their only surviving son, Edmond, and died on April 8, 1743. It is not commonly known that the Duke, by his will dated August 9, 1716, left the house in remainder, and failing his lawful issue, "to a certain youth called Charles Herbert, now under the tuition of Mons. Brézy at Utrecht," who, his natural son, took the name of Sheffield in terms of clause 11 of his father's will—confer Sheffield *v.* Earl of Orrery, and Lord Hardwicke's decision of December 4, 1745. Charles Sheffield (Herbert) was created a baronet on March 1, 1756; he sold Buckinghamshire House for 21,000*l*. in 1761 to George III., by whom it was settled upon Queen Charlotte, by the name of "The Queen's House," in lieu of Somerset, or Denmark, House in the Strand.

A view of the house is given in the *Builder* of July 6, 1901; in the Crace Collection are four highly interesting plans of the properties as in the XVIIth-XVIIIth centuries, copied by Frederick Crace from the original surveys, and in the Crace Papers many valuable memoranda relating thereto.

John Nash's Buckingham Palace was erected *temp.* George IV., and completed during the reign of his successor. On July 13, 1837, Queen Victoria entered into residence, and ten years later Blore added the east front, 360 ft. long, to the three sides of Nash's building. The railings and piers (by Decimus Burton) were at the same time set forward, and the Marble Arch, which cost 80,000*l*., and was modelled after that of Septimius Severus at Rome, was in 1851 removed from the west end of the Mall to Cumberland Gate, Hyde Park. The Mews are by Nash; the State ball and supper rooms, to the south, were added by Pennethorne. Lord Ashton, appointed Keeper of the Mulberry Garden in 1629, sold his office for 406*l*. to George Goring, and with it, seemingly, the site of Goring House. Anthony Dean, a shipwright of Harwich and Woolwich, bought the garden at the sale of Crown lands in the Protectorate, and sold it to one Chipp, who opened it to pleasure seekers ousted by Cromwell from Spring Gardens; as Colby's (his successor's), the Mulberry Garden became the resort celebrated by Shadwell, Dryden, and Pepys, and reprobated by Evelyn.

HISTORICAL NOTES.

The Chapel Royal, Holyrood.

THE *Scotsman* of June 6 contains an interesting article on the progress made in the works at the Chapel Royal at Holyrood since the period of a previous article, of which we gave an account in our issue of November 19, 1910. The edifice at present consists, as is well-known, of the ruinous walls and piers of its nave and aisles, viz., the portions to which it has been reduced after repeated damage suffered during the English wars, and which were retained in use after the Reformation. The chief result of the recent researches carried out under Mr. Oldrieve, Chief Architect to the Board of Works, has been to uncover the foundations of the choir and north transept. The latter was about 26 ft. wide and 40 ft. long, with a chapel to the east of it. The choir measured 110 ft. beyond the crossing tower, or 18 ft. less than the nave. No trace, on the other hand, has been found of a southern transept, though the foundations of a line of piers indicate the existence of a southern choir aisle. The masonry found has been pointed and left uncovered, and the slope of earth from the ground level has been turfed.

An important discovery made in the course of the work was that of the plan of an earlier church of a primitive rectangular cell type measuring about 40 ft. by 20 ft., entirely included within the mediæval choir and orientated exactly east and west. The walls varied from 7 ft. to 10 ft. in thickness, and the foundations consist of unhewn boulders set in strong lime. To the south of the church is a contemporary cemetery. Some forty graves have so far been found in which the method of interment adopted was to bury the bodies in the soil without coffins only 18 in. or 2 ft. below the surface, and to cover them with small slabs of stone.

The Château of Maisons-Laffitte.

THE French Government, which for many years has taken a high view of its responsibility in regard to the preservation of works of art, once more earned the gratitude of lovers of architecture by stepping in in the nick of time to save a masterpiece from the house-breaker's pick, when it acquired the Château of Maisons a few years ago. Though repair and precautionary measures were undoubtedly needed, the news that it is now undergoing "restoration" with a view to transforming it into a museum is possibly not so good a ground for rejoicing. May the restorer deal gently with Mansart's noble pile of creamy ashlar crowned with silvery slate! May he leave it some of the *patina* of age, so that it may be a fit home for the treasures of XVIIth and XVIIIth century furniture which it is proposed to exhibit within it!

Maisons was built between 1642 and 1651 René de Longueil, *Surintendant des Finances*, and remained for over a century in the hands of his descendants. Louis XIV. and his Queen were entertained there, and Voltaire wrote his "Henriade" under its roof. Later in the XVIIIth century, it became the property of the Count of Artois, who received his brother Louis XVI. and Marie Antoinette there. After the Revolution it was, for a time, the home of the Napoleonic General Lannes, and then of the banker, Laffitte, who sold off much of the estate in building plots. Shorn of its stately surroundings the château was occupied by persons of less note till in 1906 it was bought for demolition by a speculative builder, who, however, was induced to part with it to the State for the ridiculous price of 8,000*l*.

The Château of Maisons was designed by François Mansart, in the fulness of his genius and at the height of his career, some years after his other, severer, masterpiece at Blois. The stately stables which once flanked the forecourt, the wrought-iron rails and gates by Brisville, parts of which are now to be seen in the Louvre, the lodges, some of which still remain, and the lay-out of the gardens, some vestiges of which are still traceable in the neighbouring avenues, were all from his design. But a magnificent open-air bath near the Seine, with an architectural treatment of steps and terraces, was by Jean Marot, who illustrates it in one of his prints. The mansion itself was richly decorated. Some of its rooms retain gilded and painted ceilings, and of the works of the great sculptors of the day who were employed upon it there remain the Longueil eagles in the vestibule, a monumental chimneypiece, and the charming cupids on the main staircase.

The London Museum.

THE *Antiquary* for June says:—

"Important additions have been made to the collection which is to be placed in the new London Museum which is in process of formation at Kensington Palace. In working on a large sewer which is being laid along Grosvenor-road, in the neighbourhood of the Old Westminster Palace, the labourers have unearthed some relics which date from the XIIIth to the XVIIth centuries. They include a silver spoon of the XVth century, and what is believed to be a link with the Bull's Head Tavern, a noted hostelry near the old palace. This is a pewter trencher, upon which is engraved the sign of a bull's head. A still more curious object is the head of a figure in pottery, which probably formed part of a rosewater dish."

THE BUILDING TRADE.

SCAFFOLD CORDS AND TIES.

NOTHING is of greater importance in the construction of ordinary pole scaffolds than the connexion of the various members, for, even if of the best materials and dimensions, all these may be rendered dangerous by insecure joints.

The oldest and still the most general method of connecting standards, ledgers, puttlogs and braces is to employ hemp rope or cord securely tied by a workman expert in the art of knotting.

Leaving out from account jute cords, and cords made up from or adulterated with old material, and considering only cords

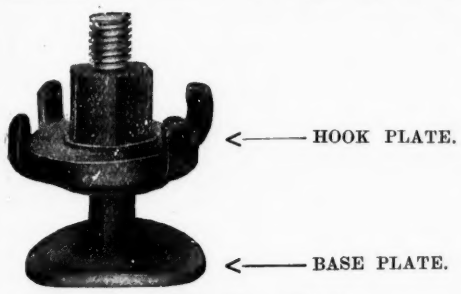


Fig. 1. Scaffixer Block.

manufactured from good hemp, it must be admitted that this variety of lashing material is not free from disadvantages.

Hemp used alone is very liable to rot, and the customary addition of tar as a preservative seriously reduces the tensile strength of the cord, particularly in cases where impure tar is employed, the average diminution of the breaking strain being from 30 to 33⅓ per cent. After a few months' wear the strength of hemp cords is further reduced by about 25 per cent., and cord which has been in stock for some time suffers in like manner.

The time occupied in making scaffold cord ties necessarily varies with the intricacy of the knot and the expertness of the workman. In a general way it is probable that the average time occupied by one or two scaffolders is not less than from 10 to 15 minutes per tie. Hence the cost of labour in the erection of a moderately extensive scaffold is a considerable item. Further expenditure is entailed by the examination

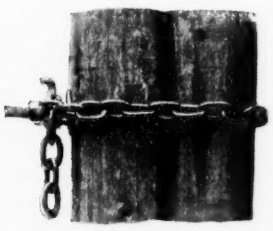


Fig. 2. Scaffixer Tie as single or band tie.

and tightening of connexions which have become loose owing to alternate shrinkage and stretching of the lashings in consequence of climatic influences, and on contracts where scaffolding is in use for fairly long periods the need for remaking of ties with new cords is by no means an uncommon experience.

The work of undoing ties when taking down a scaffold is not an expeditious operation, and adds another labour item. Therefore the total cost of labour represents an unduly heavy proportion, and when we add the depreciation in the value of cords, there is evidently room for material savings.

With the object of avoiding the costly renewal and maintenance charges inseparable from the employment of perishable material, many builders have adopted steel wire lashings made with an eyelet at one end and a metal sleeve at the other. Such lashings possess five or six times the strength of tarred hemp cords, they are practically free from variations of length, and consequently do not become loose, while another advantage is that the use of wedges, which cause so much damage to hemp cords, is rendered unnecessary. By suitable treatment the surface of the metal can be reasonably protected from corrosion, and there is no doubt that steel rope should be found more satisfactory and more economical than ordinary cords.

Nevertheless, the labour involved in making and unmaking ties remains an important item and care must be taken not to injure the lashings by excessive twisting strains. Consequently, those who are interested in scaffolding operations have sought to introduce devices of more simple character, embodying chain ties secured and tightened up by means of iron or steel brackets and screws.

The best arrangement of the kind is that known as the Scaffixer scaffold tie, which as mentioned in our article of September 10 last, was used for the whole of the scaffolding erected for the Savoy Hotel extension, and has been adopted at the new headquarters of the Young Men's Christian Association, Tottenham Court-road, the Hackney Union Infirmary, the London County Council

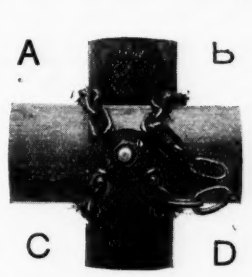


Fig. 3. Scaffixer Tie used as ledger and standard tie.

Repair Depot, Woolwich, the new Money Order Office, Holloway, Parkhurst Prison, and other large building contracts.

The Scaffixer tie, and some of its applications, are shown in the accompanying illustrations.

Fig. 1 represents the block, comprising (1) a base plate curved on the under surface to suit the form of scaffold poles, and having a spike which can be driven firmly into the wood, and (2) a hook plate with tightening screw, this plate providing ready means for holding the chains taking the place of ordinary lashings.

Fig. 2 shows the appliance used as a single or band tie, which is quickly made, after the block has been attached to one pole by means of the spike, by simply hooking one end of the chain to one horn of the upper plate, passing the chain round the poles to the horn diagonally opposite, and screwing up as tightly as possible with the spanner provided for the purpose.

Fig. 3 illustrates the connexion of a ledger and standard, the tie being made as follows: Place the block against the standard and drive in the spike; pass the end link of one chain over horn A of the hook plate, carry

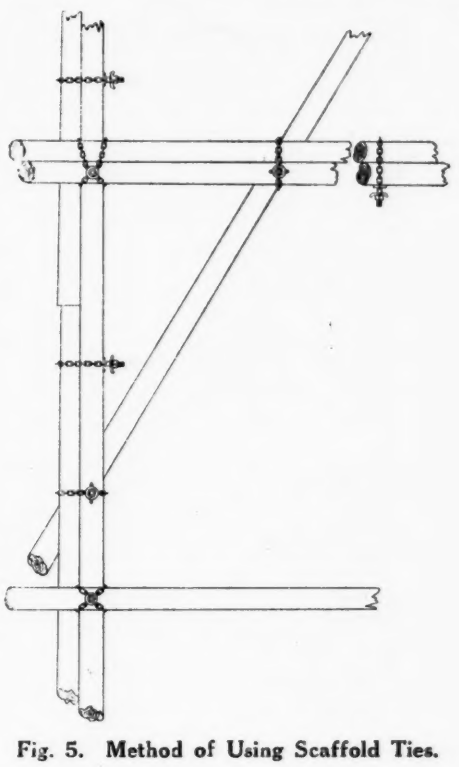


Fig. 5. Method of Using Scaffold Ties.

the chain over the ledger and round the standard, and hook it as tightly as possible over horn B; hook the end link of the other chain on horn C, carry the chain under the ledger and round the standard to horn D; finally screw up tightly with the spanner.

Fig. 4 represents two Scaffixer brackets attached to standards for supporting a ledger temporarily while the ties are being made, thus enabling one man to do work ordinarily requiring two pairs of hands. The bracket is made with a chisel-pointed foot, and two horns for hooking on the chain after the point has been driven into the pole, the operation of fixing being performed in a few seconds and that of releasing by simply unhooking the chain and drawing away the bracket.

It is stated that Scaffixer ties can be made by unskilled labourers in one minute each, and released in ten seconds. These estimates are probably quite net, and without allowance for the customary breathing-time, but are sufficiently near the mark to give an idea of the important economy in labour that can be effected by the simple appliances described, quite apart from the saving due to the use of durable materials in place of perishable hemp cords.

Fig. 5 is a sketch representing part of a pole scaffold, and showing the various ties

Fig. 4. Scaffixer Bracket used for supporting ledger while ledger tie is being made.

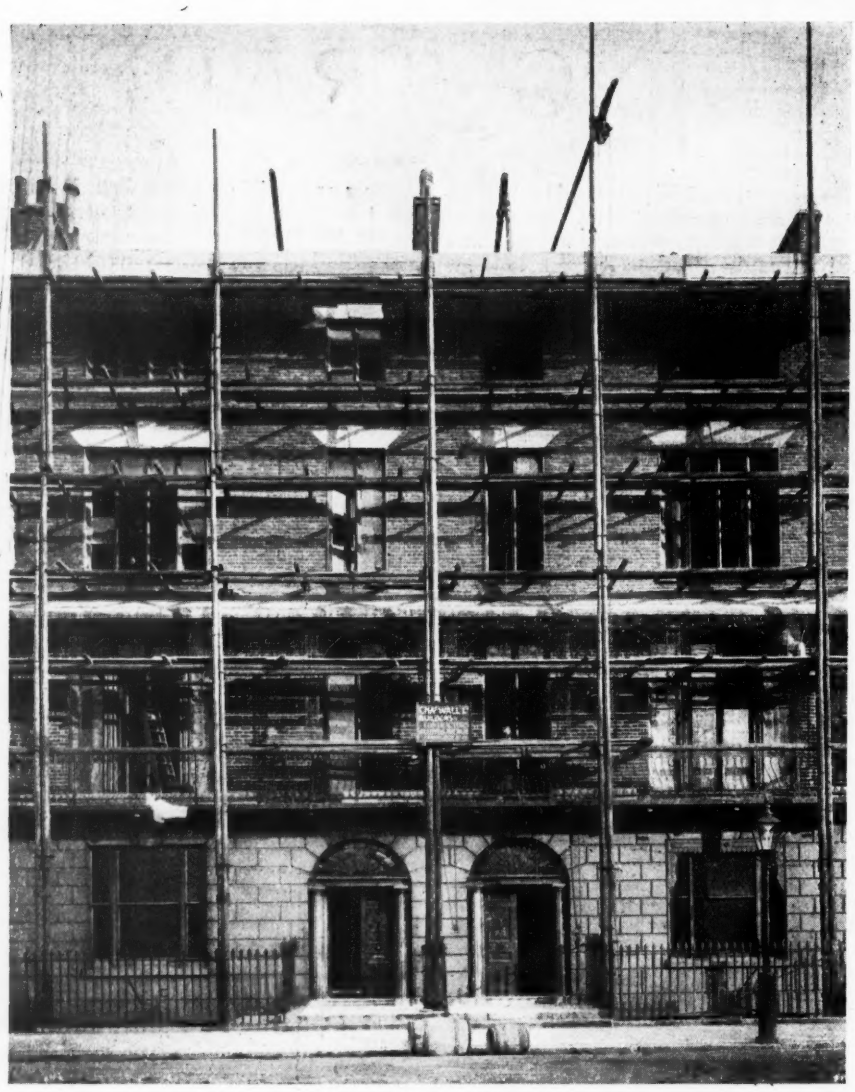


Fig. 6. Scaffolding at Dorset-square.

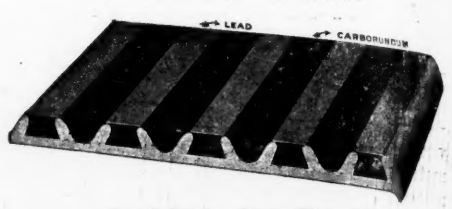
usually required. The simplicity of these, as compared with hemp lashings, is self-evident, and demands no comment. Two views of important scaffolds recently erected by Messrs. Charles Wall, Ltd., are illustrated in Figs. 6 and 7.

For the purpose of furnishing practical data as to the strength of scaffolding tied in the manner described we quote some particulars relating to an experimental scaffold constructed of six standards, three tiers of ledgers, and two platforms, consisting of ordinary 1½-in. planks carried by transverse bearers resting on the ledgers. These bearers were spaced more closely than the puttlogs in practical scaffolding, and as the structure was quite independent it was very effectively braced by diagonal poles. All ties were made with Scaffixer blocks, the only object of the test being to ascertain the safe resistance of the ledger ties. Each platform was loaded with bricks representing the dead weight of 9 tons, equal to 2½ cwt. per square foot, when the load sustained by each of the twelve ledger ties carrying the loaded platforms averaged 1½ tons. No attempt was made to determine the breaking weight, as the result attained was considered to be sufficiently convincing as to the adequacy of the ties to support any load likely to occur in actual practice.

MASON'S LEAD-CARBO STAIR TREAD.

THE accompanying illustration represents the latest form of Mason's stair tread, constituting a triple combination of steel, lead, and carborundum. The grooved steel plate is the foundation, layers of lead being run into the dovetailed grooves and strips of carborundum, chemically combined to form a species of cement, moulded in the U-shaped grooves, which are perforated in the base by a series of slotted holes, countersunk on the underside. Consequently, all three elements of the construction are firmly bound together by effective mechanical bonds.

The merits of steel and lead in combination have already been demonstrated by Mason's earlier patent, and the advantage of steel and carborundum in alternate strips has been shown by a later form of tread. The



Lead-Carbo Stair Tread.

tread to which attention is now directed combines the merits of the two systems, while at the same time embodying useful features of its own. For example, the application of carborundum alternately with steel presenting open grooves, has the effect of encouraging the collection of dirt and germs, and the particles of carborundum worn off by traffic are either swept away or fall into the grooves, the result in each case being the waste of material. In the new tread there are no open grooves for the collection of non-hygienic substances, and the abraded particles of carborundum are trodden into the surface of the intervening lead strips, where they continue to perform useful service as a non-slipping and wear-resisting material.

As may be seen by our illustration, the new tread is absolutely grooveless, while the upper edges of the steel are effectively protected by the alternate strips of lead and carborundum. The new tread seems to approach very closely to the ideal, and its life should be considerably longer than that of the preceding types.

INSURANCE BUILDINGS, ABERDEEN.

The new premises which have been erected for the Royal Insurance Company have been designed by Mr. George Bennett Mitchell, architect, of Aberdeen. The whole of the offices are lighted on the Holaphine reflector system.

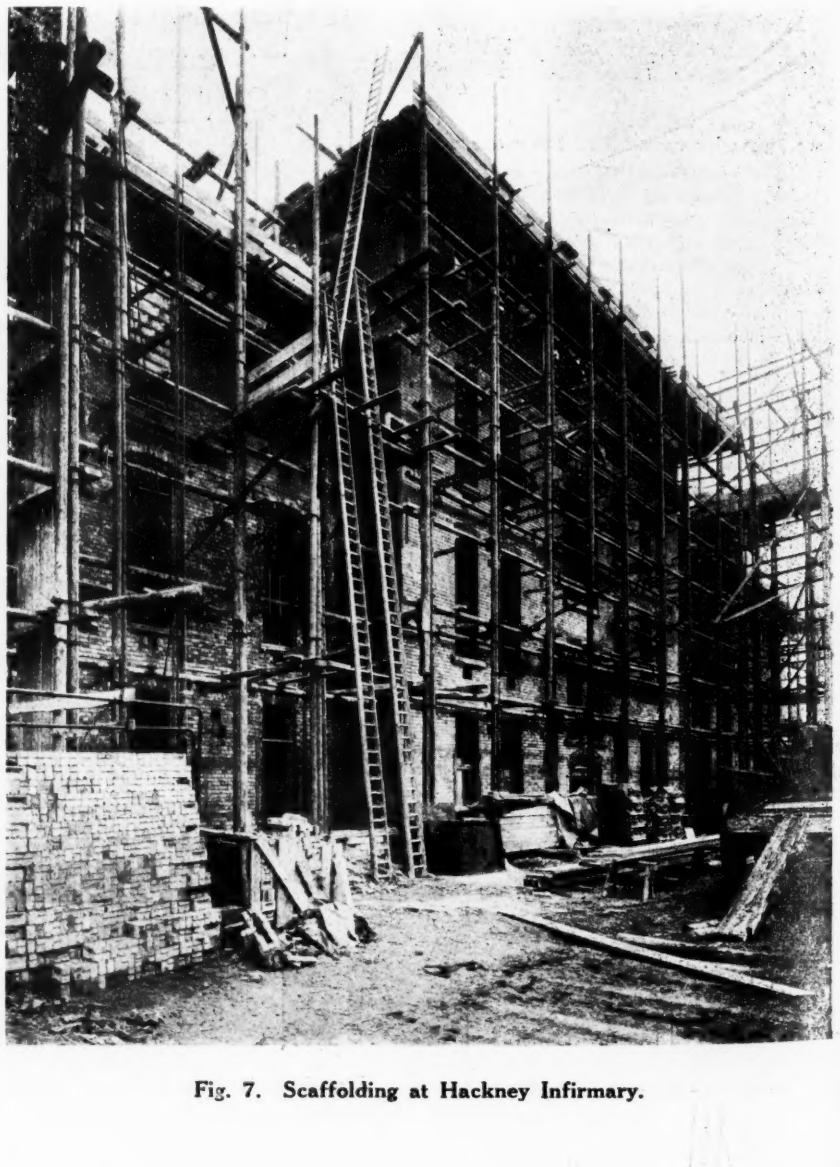


Fig. 7. Scaffolding at Hackney Infirmary.

GENERAL BUILDING NEWS.

NEW CHURCH, COPPULL.

The foundation-stone of this church was laid last week, and the building is being erected by Messrs. J. Hatch & Sons, contractors, of Lancaster The architect is Mr. Dudley Newman, of London.

ST. MARY'S CHURCH, WELWYN.

The restoration of this church has been carried out, at a cost of about 6,000*l.*, from the designs of Mr. C. J. Blomfield, architect. The contractors were Messrs. Ekins & Co., of Hertford.

NEW CHURCH, WHORLTON.

The foundation-stone of this church was laid recently, and the erection is being carried out by Messrs. Geo. Gradon & Son, builders, of Durham. The architect is Mr. A. B. Plummer, F.R.I.B.A., of Newcastle.

NEW CHAPEL, RHYDYBONT.

The estimated cost of this chapel is 1,400*l.*, and the architect for the building is Mr. W. Beddoe Rees, of Cardiff. The builder is Mr. Ben Jones, of Pencader.

NEW SCHOOL, WESTON-SUPER-MARE.

The plans for the new school chapel which is being erected have been prepared by Messrs. La Trobe & Weston, architects. The contractor for the building is Mr. Fear, and the accommodation provides for about 322.

TRAINING COLLEGE, CAERLEON.

It is proposed by the Monmouthshire Education Committee to erect a college for men teachers, and they have approved of the plans prepared by Mr. Alfred Swash, F.R.I.B.A., & Son, architects, of Newport. The estimated cost of the work is 28,248*l.*, and the contract has been secured by Mr. F. Bond, builder, of Cardiff.

CHURCH HOUSE AND INSTITUTE, MORETON SAY, NEAR MARKET DRAYTON.

The newly-erected Church House and Institute at Moreton Say, near Market Drayton, Shropshire, have been opened. The building, which contains a large concert-room, billiard-room, reading-rooms, etc., has been designed by Mr. Craig, A.R.I.B.A.

ADDITIONS TO HOTEL, LONDON.

Wellington House Hotel, Buckingham-gate, S.W., which was erected from designs by Messrs. Palgrave & Co., and opened about a year ago, is to be further extended by the erection of seventy additional bedrooms, also club and business premises adjoining. The style adopted will be in unison with the main elevation by the same architects.

TRADE NEWS.

Under the direction of Mr. A. Boswell, architect, Glasgow, the "Boyle" system of ventilation (natural), embracing Boyle's latest patent "air-pump" ventilators and air inlets, has been applied to the Casino, Glasgow.

Messrs. T. W. Vaughan & Co., Ltd., electric lighting, heating, and ventilating engineers, fire appliances and art metal workers, of Islington, inform us that up to the present they have carried out the electric lighting, heating, ventilating, wrought-iron, and brass work and general fittings at over seventy of the most up-to-date cinematograph theatres, and that they have been complimented upon the satisfactory manner in which they have conformed to the requirements of the London County Council and the architects. When these theatres first originated, and came under the control of the London County Council, the firm had to approach the Council upon the safety of the operating chamber and film room, and their suggestion to the Council led them to prepare a self-acting fire shutter, closing over the four holes simultaneously by a pull-lever either from the pay-box or from the inside of chamber, thus giving the operator every chance of escape in case of fire. The Council approved of the suggestions.

The Brilliant Sign Company (1907), Ltd., 38, Gray's Inn-road, London, W.C., have executed nearly the whole of the signs for the Festival of Empire, Crystal Palace, both the day and night signs. At the present time they have a large one in hand for the National Gas Engine, measuring 50 ft. long by 3 ft. 6 in. deep, which will be illuminated. It will be fixed on top of the power-house, and will be readable all over the grounds. The firm have also large contracts in hand for illuminated signs for the Great Northern Railway, Great Western Railway, Great Central Railway, also the Metropolitan and District Railways. The firm, in the extension of their factory, which is now in course of progress, are making room for another twenty hands in this department.

The Capel Church Schools, Folkestone, are being supplied with Shorland's patent Manchester grates and ventilators by Messrs. E. H. Shorland & Brother, Ltd., of Failsworth, Manchester.

PROJECTED NEW BUILDINGS IN THE PROVINCES.*

ABERDEEN.—Reconstruction and extensions to school of art at Robt. Gordon's Technical College (35,000*l.*); Mr. J. A. Ogg Allan, architect, 22, Union-terrace, Aberdeen.

Backbarrow.—Mission hall; Mr. J. Pattinson, architect, Biskey House-road, Bowness, Windermere.

Batley.—Extensions to works of Messrs. Wilson Bros., woollen manufacturers, Little Orme Mills. Alterations and additions, printing works, for Messrs. R. Dewhurst & Co.

Bishop's Stortford.—Preparatory school at the College (3,000*l.*); Mr. Joseph Day, builder, South-street, Bishop's Stortford.

Bucknall.—Isolation hospital (2,350*l.*); Architect, care of the Managers, Stoke-on-Trent and Stoke Rural Joint Hospital Board.

Burton-on-Trent.—Two cottages, Bearwood-hill (464*l.*); Messrs. J. & T. W. Selby, builders, Edward-street, Burton-on-Trent.

Buxton.—Alterations to Cavendish High School for Girls; Messrs. Dickenson & Son, builders, Derby.

Carlinghow.—Warehouse for Messrs. C. Robinson & Co.

Castleford.—Place of worship, Lower Oxford-street, for the Castleford Spiritual Evidence Society.

Chester.—Alterations and additions to the Ship Victory Hotel for the Birkenhead Brewery Company.

Clydebank.—Store, Dumbarton-road, for the Clydebank Co-operative Society.

Connah's Quay.—Public hall, Chester-road (2,000*l.*), for the Dock, Wharf, Riverside, and General Workers' Union, Connah's Quay Branch.

Corby.—School (350 places); Architect, care of Mr. J. L. Holland, Secretary, Education Committee, Northamptonshire County Council, Northampton.

Doncaster.—Woollen factory for Messrs. Geo. Anderton & Sons, Ltd., Victoria Mills, Cleckheaton.

Droylesden.—School off Fairfield-road (8,100*l.*); Messrs. S. Robinson & Son, builders.

Eastbourne.—Extensions to Old Town Baths (414*l.*); Mr. F. W. Allcock, builder. Plans have been passed as follows:—Additions, Neuville, Hartfield-square, Mr. P. D. Stonham, architect; eight houses, Victoria-drive, Messrs. Sawyer & Son, builders; alterations, premises, Beech-road, Mr. P. D. Stonham, architect, for Motor Cabs Company, Ltd.; additions, Crief House, Hardwick-road, Mr. P. D. Stonham, architect, for Mr. Rayson; six houses, Brodrick-road, Mr. Andrew Ford, architect, for Mr. R M. Duly; additions, Ashburnham, Mr. P. D. Stonham, architect, Messrs. G. Bainbridge & Son, builders, for Mr. Campbell Harris.

Grimethorpe.—Picture palace for the Gem Picture Company.

Hallwood (near Grenoside).—Small-pox hospital (2,000*l.*); Mr. F. A. S. Crawshaw, Surveyor, Wortley (Yorks) Rural District Council.

Hoyland.—Proposed swimming-baths; Mr. F. Hewitt, Surveyor, Hoyland Urban District Council.

Huntington.—Enlargement of school; Mr. J. C. Wrigley, Secretary, Education Committee, North Riding of Yorks County Council, Northallerton.

Leatherhead.—Alterations to girls' school (2,500*l.*); Messrs. Jones & Andrews, builders, Crescent Works, Barnmead-road, Beckenham.

Leeds.—Hostel (11,185*l.*); Messrs. H. Atkinson & Sons, Ltd., builders, Carlton-street, Leeds.

Leek.—Proposed school off Ashbourn-road; Mr. G. Balfour, Secretary, Education Committee, Staffs County Council, Stafford.

Leicester.—School, Western-road (1,700*l.*); Messrs. W. & H. Foulds, builders, 239, Narborough-road, Leicester.

Lowestoft.—Enlargement of school, Lovewell-road (2,000*l.*); Mr. W. S. Wilkins, builder, Lowestoft.

Maidstone.—Showrooms and offices, King-street, for Messrs. G. Whitcombe & Son.

Mansfield.—Offices, etc., Clipstone-avenue; Mr. J. F. Fearn, President, Derbyshire and Notts Enginemen and Firemen's Union, Mansfield.

Mickley.—Wesleyan Church; Mr. J. Walton Taylor, architect, St. John-street, Newcastle-on-Tyne; Messrs. Middlemiss Bros., builders, Stepney Bank, Newcastle-on-Tyne.

Milton.—Proposed hostel (21,600*l.*); Messrs. J. J. Bascombe and H. E. Curtis, Joint Secretaries, Education Committee, Portsmouth Town Council.

Northallerton.—Additions to Grammar School (4,400*l.*); Messrs. Airey & Son, builders, 2, Claro-road, Service-road, Leeds.

Northampton.—The following plans have been passed:—Six houses, New-street, Mr. T. Higgs; rebuilding of St. Peter's mission room, Green-street, for the Rector of St. Peter's Church; six houses, Florence-road, Mr. A. Cleaver; five houses, The Broadway and Park-crescent, Mr. A. P. Hawtin; alterations to Palace Theatre, Gold-street, for Messrs. Samson & McNeil, Ltd.; three houses, King Edward-road, Mr. E. Green; alterations to premises, Guildhall-road, Mr. C. W. Phipps; six houses, New-street, Mr. J. W. Gossage.

Nottingham.—Proposed block of schools between Stanley and Harcourt roads; Mr. W. J. Abel, Secretary, Education Committee, Nottingham City Council.

Ormskirk.—Shops and premises, Moorgate, for the Skelmersdale Co-operative Society, Ltd.

Orsett (Essex).—Infirmary block (4,960*l.*); Mr. C. M. Shiner, architect, the Gate House, Grays, Essex.

Plymouth.—Adaptation of free library premises for offices; Mr. J. Paton, Surveyor, Plymouth Town Council. Plans were passed for four houses, Winston-avenue, for Messrs. Wood & Easterbrook. The Rev. A. E. Baker and Building Committee have lodged a plan for a proposed church at Laira.

Ross (Hereford).—Proposed free library; Mr. A. H. Pearson, Surveyor, Ross Urban District Council.

Rotherham.—A plan has been passed for sixteen houses, Doncaster-road, for Mr. J. H. James. The following plan was lodged:—Ten houses, Fitzwilliam and Doncaster roads, for Messrs. Chas. Green's Sons.

Salford.—The following plans have been passed:—Extensions, Ordsall Electric Works, Middlewood-street, Salford; extensions, offices, Churchill Machine Tool Company, Ltd., Frederick-road, Pendleton: alterations, "Spinners Arms," Oldfield-road.

Selby.—Workmen's houses for the Olympia Oil and Cake Company.

Sheffield.—Refreshment pavilion and conveniences, Norfolk Park (1,400*l.*), and shelter and conveniences, Bole Hills Recreation Ground (350*l.*); Messrs. J. Eshelby & Son, builders. The following plans have been passed:—Additions to premises, Heeley Bank-road, for the Little Sisters of the Poor; additions to premises, Leeds-road, for Messrs. Brown, Bayley's Steel Works, Ltd.; eleven houses, Psalter-lane, for Mr. G. Sivil; addition to premises, Crook-place, for the Sheffield Laundry Company; addition to premises, Aldine-court, for Sir W. C. Leng & Co., Ltd.; alterations, Adelphi Hotel, Arundel-street, for Messrs. Chambers & Co., Ltd.; four houses, Elmham and Banham roads, for Messrs. W. & E. Sadler; church and school additions, Nethergreen-road, for the Trustees of the Nethergreen United Methodist Church; twelve houses, Glenalmond-road, for Mr. A. J. Belton; alterations and additions, Pheasant Inn, Sheffield-lane Top, for Messrs. J. L. Cockayne & Sons; alterations to premises, Stepney-street, for the Duke of Norfolk; six houses, Wincobank-avenue, Mr. Thos. Pye; sanitary conveniences, Carlisle-street East, for Messrs. H. Bessemer & Co., Ltd.; alterations, premises, Rutland-street and Woodside-lane, for the Health Committee of Sheffield Corporation; five houses, Baker-street and Lawrence-street, for Messrs. W. & E. Sadler; four houses, Greenland-road, Mr. W. Heath; four houses, Cliff-road, Mr. Thos. Lees; additions, Attercliffe National Schools, Leeds-road, for the Managers; additions to steel warehouse, Brightside-lane, for W. Jessop & Sons, Ltd.; cinematograph theatre, Upwell-street and Little-lane, for Messrs. Reeder & Burgon; additions to premises, Livingstone and Bessemer roads, for Messrs. Jonas & Colver, Ltd.; four houses, Banner Cross-road, Mr. J. A. Wragg; eight houses, Priestley-street, Messrs. Plant Bros.; alterations and additions to premises, Wood and Thirza streets, for Messrs. Strout's Brewery Company, Ltd.; additions to premises, Bright-street, for the Brightside Foundry and Engineering Company, Ltd.; alterations, "Golden Lion" public-house, Alderson-road, for Messrs. Mappins Masbro' O'd Brewery, Ltd.; seven houses, Fraser-road, Mr. W. Stockton; eleven houses, Earsham and Clun streets, Mr. G. E. Phillips; alterations, Industry Inn, Washington-road and Pearl-street, for Messrs. W. Greaves & Co.; nine houses, Springvale and Northfield roads, for Messrs. T. Bray & Sons; addition, "Sheffield Arms" public-house, Meadow-street, for Messrs. T. Berry & Co., Ltd.; eight houses, Tullibardine-road, Mr. J. Sivil; ten houses, Abbeydale-road, Mr. G. H. Johnson; additions and alterations, "Devonshire Arms" public-house, Eccleshall-road, for Messrs. S. H. Ward & Co., Ltd.

Slaley.—Large house; Messrs. Middlemiss Bros., builders, Stepney Bank, Newcastle-on-Tyne.

Styal.—Extensions to homes (1,370*l.*); Clerk, South Manchester Board of Guardians.

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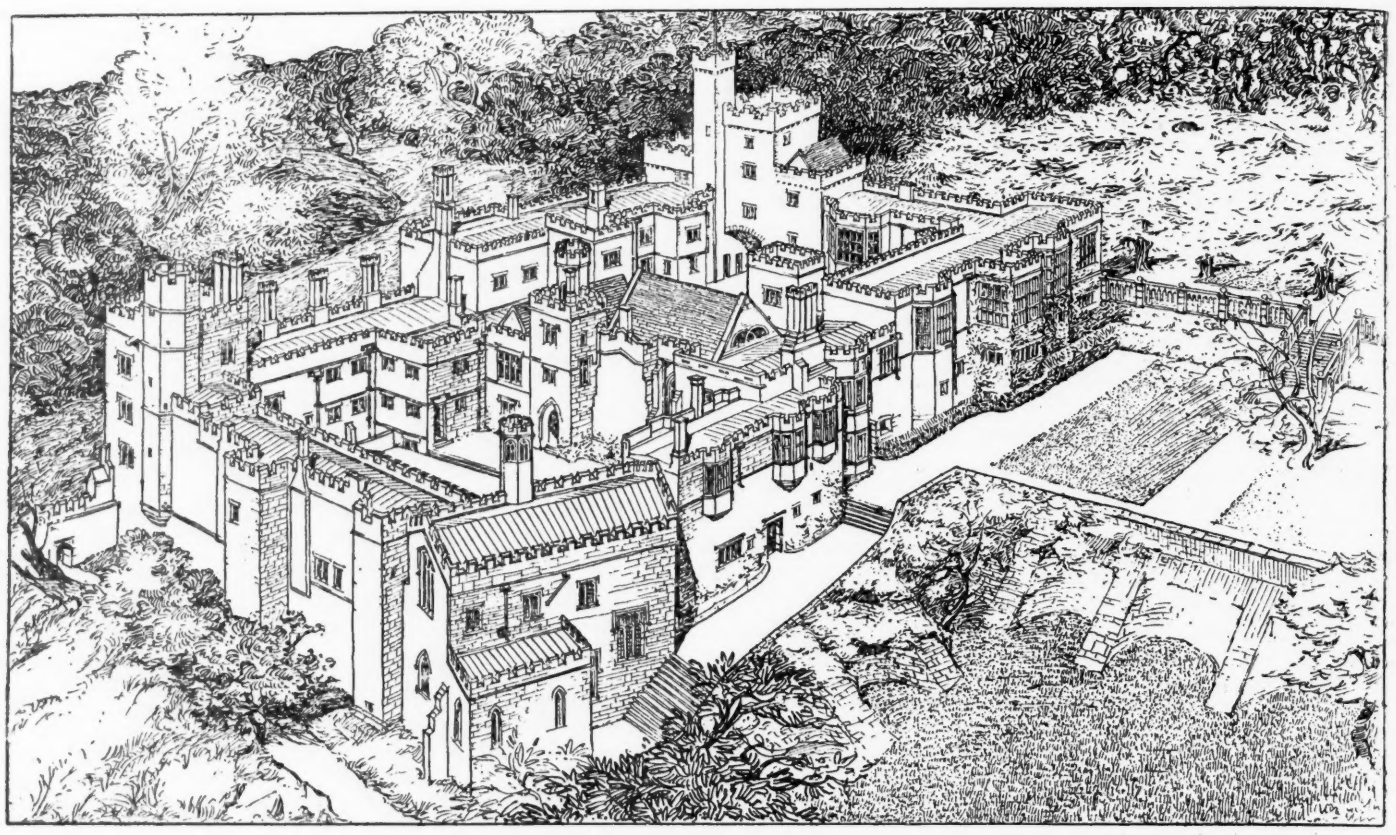
* See also our list of Competitions, Contracts, etc., on another page.



Haddon Hall, Derbyshire. Bird's-eye View from the South-West.

(From Garner & Stratton's "Domestic Architecture." Batsford.)

TUDOR ARCHITECTURE.*

IT is a question whether "B. T. Batsford" or the public is the more to be congratulated on the completion of the great task undertaken so many years ago of illustrating the history of domestic architecture in England from 1450 to 1800. For no less than this is the obligation under which all lovers of English architecture are placed by the set of six handsome volumes given to the world. Truly it was a great conception, whether the object was consciously aimed at from the beginning or whether the scheme grew to these dimensions in the carrying out. That the latter rather than the former is the case appears from the fact that the portion dealing with the initial stages is published last, while those on the earlier and later Renaissance in England have long been the *pièces de résistance* in all properly-equipped architectural libraries.

Be this as it may, the coping-stone has now been placed on the edifice by the issue of two sumptuous and learned volumes on Tudor architecture, which are in every way worthy of the scheme, paper and print, illustrations and letterpress each contributing its share to a success which is in a large degree the result of the untiring activity and personal enthusiasm of Mr. Herbert Batsford. They deserve an even wider welcome than their predecessors have met with.

In so many years of work—a round score at least—experience has been accumulated, and "Tudor Architecture" has benefited thereby. It implies no reflection on the work so admirably done by Messrs. Gotch and Talbot Brown on the Early, or by Messrs. Belcher and Macartney on the Later Renaissance to say that it has been surpassed in the latest addition to the series, and this in spite of unforeseen difficulties, the most serious of which was the death at an early stage in the work of its originator, Mr. Thomas Garner. The publishers were fortunate in securing at this juncture the services of Mr. Arthur Stratton, who has carried the task through with the utmost ability.

In the amount of its contents, to begin with, "Tudor Architecture" shows a considerable advance on its two predecessors. The plates mount up to 181, as against their 145 and 170 respectively, the illustrations in the text to 364, as against 181 and 153; but it is in the letterpress—246 pages, as against sixty-four and 116—that the principal increase is observable, and it is in this section of the book, more even than elsewhere, that the results of Mr. Stratton's indefatigable industry and profound knowledge of his subject are to be appreciated. The most useful work, which Mr. and Mrs. Stratton have devoted to the hunting out and elucidation of the history of the buildings illustrated, is in itself an enormous one, involving doubtless the traversing of a luxuriant growth of baseless romance and half baseless tradition before the real facts could be arrived at. The assistance of Canon Cox in this department is a guarantee of the soundness of the archæological information supplied. The short monographs on the buildings, which are admirably done, are fuller than in previous volumes, and are amplified by interesting descriptive and critical notes.

But Mr. Stratton's services do not end there. In his Introduction, a scholarly piece of work, he discusses the origin and moulding influences of the domestic architecture of the Tudor period, and describes in broad lines its main characteristics, while the concluding section of the text analyses *seriatim* the typical features and details of the Tudor house—its gatehouse, its doors and windows, its chimneys and chimneypieces, its roofs and ceilings, and staircases. In this portion of the book the crafts of the mason, the carpenter, and the worker in lead, iron, plaster, and glass are treated in turn in a manner which cannot fail to be of the greatest interest and utility.

When it is added that the volumes are provided with very complete indexes, topographical and analytic, it will be realised that they contain everything that the most exacting student can require.

In the matter of illustration no pains or expense have been spared to make the work fully representative, and the result attained is one of almost unsurpassable excellence. The photographs, reproduced by the collotype process, attain the high standard to which the house of Batsford has accustomed us in the previous volumes of this series and elsewhere, in the judgment exercised in the selection of views, as well as in the beauty of their rendering. These are supplemented by a number of reproductions of modern measured drawings and sketches of existing buildings and of old drawings of various kinds to illustrate buildings no longer standing or altered beyond recognition. The plates comprise some forty sheets devoted to special features and details (p. 761), including both photographs and beautiful drawings by Mr. Stratton and others, in which examples illustrating a special point, but drawn from different parts of the country, are grouped together in a very instructive manner.

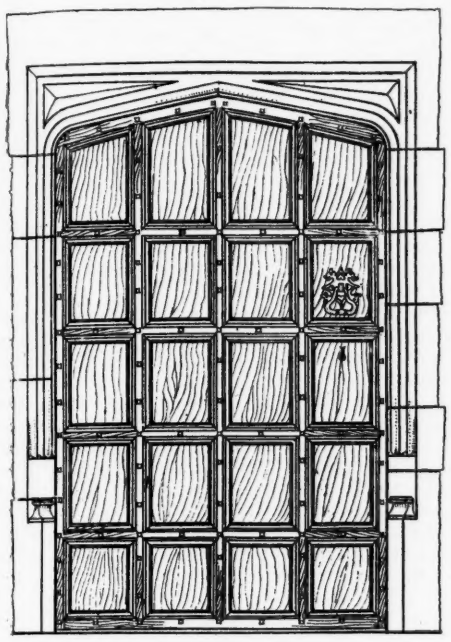
In architectural evolution no impassable gulf ever separates one phase of style from the next, and since a certain amount of overlapping is inevitable in any system of division, the scope of these volumes has wisely been fixeed with generous latitude. The Tudor period has been expanded so as to embrace the era of the Wars of the Roses on the one hand and, on the other, the reign of James I. It is at first sight somewhat startling to find a book on Tudor work brought down to the very moment when the later classic Renaissance begins, but this arrangement is justified if the Tudor style is conceived of as comprising all domestic work of the period defined in which the basic and preponderant element is of the native Gothic stock, even if this be in many cases partly overlaid and tricked out with decorative elements of foreign origin. Thus understood, the Tudor style includes in its early stages a great deal of pure Gothic and in its later much that cannot be sharply distinguished from the Elizabethan and Jacobean styles. The distinction being merely one of the degree in which the Renaissance elements are present, certain houses, such as Haddon Hall, which are astride of the border-line provide examples for Mr. Gotch as well as for Mr. Stratton.

This question of the introduction of foreign elements is still at times apt to be a burning one, and some writers still inveigh against importations from abroad with all the fervour of a Tariff Reformer denouncing the dumping of German sausages. Mr. Stratton, however, is far too sane to indulge in such alarums, yet even amid the moderation and sound common-sense of his pages a lurking tendency may be detected to resent the intrusion of the foreigner.

As a matter of fact, free trade in ideas is usually salutary, and the national arts which owe nothing to foreign influences are few. The delicate and wholly national art of Japan is based on that of China. The art of the Middle Ages had that of Rome as a starting-point, however remote, and was not unaffected by Eastern influences. English

* *The Domestic Architecture of England During the Tudor Period.* Illustrated in a Series of Photographs and Measured Drawings of Country Mansions, Manor-houses, and Smaller Buildings, with Historical and Descriptive Text. By Thomas Garner and Arthur Stratton. (B. T. Batsford.)

Gothic could scarcely have arisen without the aid of France, however diversely it may have developed. The absorption of foreign ideas usually corresponds with a distinct need, which can only be satisfied in this way, and the test of its success is the capacity of a nation to assimilate what it absorbs from outside. Thus, to take an illustration from a later period of our own history, we find the Dutch influence prevailing from the time of



External Door, Chantmarle, Dorset.
(From "Domestic Architecture." Batsford.)

the Commonwealth onwards in our minor domestic architecture and Dutch ideas so digested in absorption as to produce a characteristically English style admirably adapted to our own life and surroundings.

But the ideas the Italian Renaissance introduced by craftsmen from Italy, France, or the Netherlands, or through the Flemish pattern-books, a century earlier were seldom so completely assimilated, and in so far their introduction was less satisfactory. The Introduction insists, and, in spite of these considerations, rightly so, on the English character of the Tudor style as a whole, though whether the expression "as national as the name with which it is stamped" is altogether a happy one is open to question in view of the fact that Tudor is a Welsh name, and that the Tudor dynasty was founded by a Welsh usurper, who devoted much care to vilifying and extirpating the native English Royal Family. The late Gothic of England, whether in the church, the castle, or the humbler dwelling of the citizen, was a native development of mediæval architecture differing in many ways from the parallel lines of evolution on the Continent, and differing on the whole for the better. It is usually stamped with a sturdiness and a quiet dignity which the more florid and aspiring architecture of other countries often lacks. It adapted itself easily and successfully to the wide possibilities opening out before domestic design at a time when men's minds were slipping away from the control of the Church and internal warfare was ceasing to be the common occupation of King and gentry.

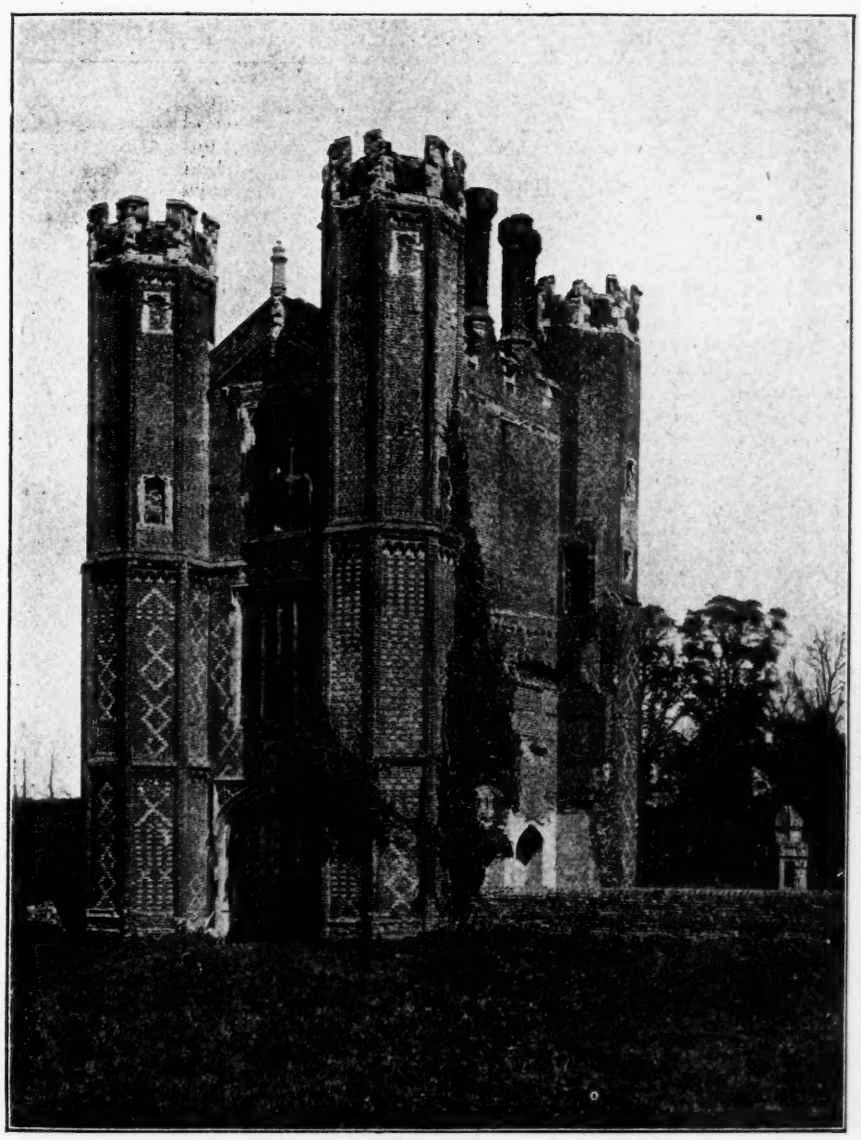
With all its merits, however, it could not altogether escape defects, which were inherent in the age itself rather than in the exotic character of certain types of ornament. The late Gothic period, whether in England or France, in the Netherlands or Germany, suffered from the disease of craftsmanship. It was rather a materialistic age, and the mediæval craftsman had to a large extent lost his inspiration. But he revelled in his craft, in cleverness and elaboration for their own sake. Ornament and intricacy were a prime aim with him. Difficulties were invented to provide scope for ingenious solutions. The result was often a restless and over-ornate architecture, which fails to suggest its essential purpose and structure; the same tendency to exaggeration is manifested in the monstrous, if delicate, *Sacramentshaüslein* of Nuremberg, the wavering web of stone lace of the mausoleum at Brou or the screens at Albi, the "crinkle-crankle" and hanging arches of Henry VII.'s Chapel. The tendency was not a Renaissance one, and at first the Renaissance and the rise of the modern architect did little to repress it—the fretted staircase of Blois and the tangled skyline of Chambord or Burghley are as unreposeful as anything that preceded them. But under their influence there was eventually evolved an architecture which excelled in the qualities of order, breadth, and repose before it ultimately declined into formalism and frigidity.

Thus in the illustrations of "Tudor Architecture" many examples where the lack is felt of a controlling mind with broad views is manifest, and the craftsman with his absorption in beautiful detail is too assertive. Such, for instance, are the Guildhall at Hereford (p. 183 and pl. cxix.), with its crowding gables and oriels, its luxuriant tracery and carving; the ubiquitous spiral pinnacles and chimney-stacks, which detract from the repose of Barrington Court, otherwise so admirably schemed (pl. lxx.); the insistent panelling, which adds nothing to the effect of the quaintly picturesque garden front of Great Cressingham Priory, and the bays at Windsor (p. 208) and Thornbury Castles (pl. xxvi.), with their confusingly complex plans.

Again, timber-work, which is delightful in cottages or houses of moderate size and in prevailingly vertical treatment, as at Chiddingstone or Ockwells, becomes almost distracting when applied to vast manor-houses and fussed up with complex planning or elaborate patterns, as at Moreton or Pitchford Halls. But lack of restraint is not the only fault of the carpenter and mason designers; they sometimes also fall into strange lapses of proportion and grouping. Thus at Down Ampney (pl. cxxxviii.) the gatehouse gable is crushed between overwhelming turrets, at Winterbourne Anderson an exquisitely-designed E-shaped front is marred by the carrying up of a protruberant bay into the central gable, and the great battlemented bay window at South Petherton (p. 37), beautiful as it is in itself, is out of scale with the rest of the elevation.

But to demand designs entirely satisfactory as complete compositions in the works of the Tudor builders is perhaps scarcely fair, though some examples of such occur among the illustrations of this book, as will be pointed out. Their faults were the faults of the age, and were on the whole rarer and less glaring than on the Continent. It is ungrateful to dwell on them, and more profitable to turn to the merits which enabled them to endow our land with such a rich store of beauty.

Foremost among these is pleasant and picturesque grouping, the outcome in many cases, no doubt, of that instinct for harmonious form which but seldom deserted the mediæval builder, but also at times of sheer lucky accident in the original planning or in the successive additions in a long period of growth. The effect of their prevailing long and low lines so singularly in agreement with the tranquillity of English scenery is enhanced by the use of sound native materials, which time and weather soon toned to the key of the surrounding landscape. The haunting charm of such a house as Westwood (p. 762) is largely due to fortuitous incidents of utilitarian building, touched by the mellowing influences of time and nature. Even happier instances of irregular grouping abound throughout the plates. Another prime achievement of the Tudor builder is the design of strikingly beautiful and finely-proportioned features. Such—to take but a few from a wealth of material provided by these volumes—are the oriels at Cerne Abbas (pl. cxliii.) and Montacute (p. 33), the bays at South Petherton



Little Leighs Priory, Essex. From the South-West.
(From Garner & Stratton's "Domestic Architecture." Batsford.)

the chimney at Preston Bermondsey, and other details. When picturesque grouping and beautiful features are combined, as in the case of Haddon Hall, the effect is one of unforgettable charm.

Very frequent, again, are happily-conceived compositions consisting of an entire wing or block composed by a regular grouping of such features, such as the coupled bays in the courtyard of Skipton Castle (pl. cx.) and the Dolphin Inn at Norwich (pl. lxxii.), the long line of grouped windows divided by carefully-graded buttresses at Much Wenlock (pl. i.), the timber fronts of Ford's Hospital at Coventry, with its three gabled oriels (pl. xlix.) (p. 763), and of Great Sir Hugh's at Great Badron, with its three oriels and five-bayed loggia (pl. cxxxiv.). In other cases finely-balanced effects are obtained without strict symmetry, as in the gateway of St. John's College, Cambridge (p. 3), bewilderingly irregular in detail, or at Ockwells (pl. xviii.), where a porch is balanced by a bay window, and the gabled return ends differ in design.

In some cases, however, the Tudor builder advanced a step further and conceived an entire and more or less complex building on a definite, balanced scheme. Such, for instance, is the Baltimore House at Tisbury (pl. cxxiv.), where a pair of gables forms the end features of the two long elevations, with a chimney-stack and an entrance-door as the central feature respectively. Fritwell Manor (pl. cxvi.) is a good example of the familiar E-plan with small central gable and large lateral ones; Newton Summaville (pl. cxxxii.) of a front, set out with rare breadth and spaciousness, in which the three gables are separated by intervening square bays; North Cadbury Manor House (pl. cxxxi.) of a slightly less successful variant of the same theme, but with four gables; and Lake House (pl. cxxvii.) of a five-gabled front, with the central and terminal bays emphasised by battlemented bays. This example also illustrated the delightful device, so characteristic of the period, of patterning the walls in materials of different colours—stone and flint in this case, but red and grey brick in the noble gatehouse of Little Leighs Priory (p. 761). The most salient characteristic of a style is usually the proportion of window to wall, but it is only necessary to compare the lavish fenestration of Losely Manor (pl. xcviii.) with the far sparser one of Winterbourne Anderson (pl. cviii.) to realise the variety of the resources of the Tudor builders, who was able to produce satisfactory results with either method.

A number of plates illustrate the interiors of Tudor houses, from the impressive hall of Hampton Court, with its open timber roof, to the more intimate low-ceiled rooms of Haddon or Brenchley Parsonage. We are thus able to study a number of examples of enriched timbering and plaster-work, as well as of wall decoration, particularly in the form of panelling. This includes some of the innumerable variations of the linen-fold pattern, whose affinities it is interesting to trace out. We may observe, for instance, the great fondness of the age for the ribbed treatment in the extension to such a form as a shield in the Pilgrims' Inn at Gloucester (p. 27), and one may follow the evolution of a new form, which may be termed the X motive, through the type where the linen-folds were boldly cut into in double ogee form, as in an overmantel at Norwich (p. 126). This form of panel decoration, often used in combination with the vine ornament, as illustrated in a room at Boughton Malherbe (pl. xlvi.), and sometimes combined with a medallion, as in the Bishop's Palace at Norwich (pl. clix.), is peculiar to the period, but not to this country. A good French example of it is to be seen on a door in the South Kensington Museum. This type, once arrived at, long persisted, and may be recognised in the arrangement of the Renaissance arabesque elements of the hall panelling at Halnaker.

To follow out the innumerable lines of thought and study to which both text and plates point the way would require a volume of no mean size, but the stress laid by Mr. Stratton on the national character of Tudor architecture suggests a comparison with the contemporary architecture of our nearest neighbours across the Channel, which is sharply distinguished from it by a series of peculiarities found in Gothic and Renaissance buildings alike. The most striking feature of the English domestic work lies in its long low lines and in the relative absence—in spite of the characteristics to which the term "Perpendicular" is due—of strongly-marked vertical lines or of an aspiring tendency. Two of the most striking national divergences are observable in roof and window treatment. The English roofs are not only relatively of lower pitch than the French, but they are as far as possible continuous, the minor spans merging into the larger, while the French give a separate hipped roof to each block or wing, which is thus divided by a deep valley from its neighbours. The English windows commonly have long ranges of lights side by side, the French, except in timber construction, seldom more than two. Both these points contribute not a little to emphasise the general difference of character above referred to. Other points of divergence may also be noted. In France oriels are far commoner than in England, but, on the other hand, the bay window is virtually unknown. The staircase, which plays so surprisingly small a part in Tudor architecture, was from an early date an important feature in France, whether in the form of the innumerable turret-stairs or of the larger spiral stairs, of which the XIVth-century "Grand 'Vis" in the Louvre was the prototype and that of Blois the culmination, or the external straight flights like those of the Cour des Comptes and Sainte Chapelle in Paris. Finally—to mention but one more difference—the general use of stone vaulting in France seems to have left no room for the development of that delightful art of plaster decoration which is one of the most

Manor House, Westwood, near Bradford-on-Avon.
(From Garner & Stratton's "Domestic Architecture." Batsford.)

Ford's Hospital, Coventry. West Front.
(From Garner & Stratton's "Domestic Architecture." Batsford.)

charming features of the English style, and is fully illustrated in the present work.

The question whether without foreign intervention English architecture could have developed on lines of its own to suit the varying requirements of subsequent centuries is an idle one, and impossible of answer, but if there were any doubt whether Tudor England could hold her own against any Continental country in her domestic buildings a study of these enchanting plates would soon resolve it. And though the degree in which they can be taken as a direct model by the modern architect in his efforts to cope with present-day requirements is probably a limited one, there is no limit to the instruction, the inspiration, and the delight which he can and should derive from a study of the splendid book with which the names of Mr. Garner, Mr. Stratton, and Mr. Batsford are so honourably associated.

TRADE CATALOGUES.

Messrs. Edmond Coignet, Ltd., of Westminster, send us a copy of their latest handbook on "Reinforced Concrete Constructions." The book commences with a clear and well-illustrated exposition of the characteristics of the Coignet system, now so well known in this country that detailed mention is not required in this note. The remaining pages are divided into four parts, relating to the Coignet system as applied to buildings, piles, foundations and marine works, bunkers, reservoirs, silos, tanks, and pipes, and bridges. The Coignet system in itself is one remarkable for simplicity and involving the use of nothing but materials which can be readily obtained from any manufacturer or merchant. Although introduced into this country at a comparatively recent date, the system has made great headway, a fact amply evidenced by the many examples of British works illustrated in the present edition. The building shown in the accompanying view is one of the works executed abroad, being the Banque des Valeurs Industrielles, Paris, designed by M. J. Hermant. Although the exterior is an example of masonry construction pure and simple, with the exception of the dome and arched roofing the interior is entirely in reinforced concrete, and was completed in a remarkably short period of time. Among important structures illustrated in the handbook are the tobacco warehouses, Bristol; the Western District Post Office, London; public buildings at Kingston, Jamaica; and the Holloway Money Order Department, London.

The British Ceresit Waterproofing Company, Ltd., of Caxton House, Westminster, London, S.W., send us a booklet about "Ceresit," the well-known waterproofing composition. It is claimed that concrete structures may be made waterproof throughout, without necessity for any extra coating, by using "Ceresit" in the water with which the concrete is mixed. The saving in cost of labour and material is obvious. In the case of concrete structures already existing, and for walls of brick and stone, a coating of cement mortar waterproofed with "Ceresit" will render them thoroughly water and damp proof. "Ceresit" is used by H.M. Office of Works, the War Department, the Metropolitan Asylums Board, and other important public bodies.

Messrs. J. Priest & Son, Ltd., of the Castle Ironworks, Bristol, call our attention to their ornamental smith work and hammered work. This firm also manufacture agricultural ironwork of all kinds, builders' ironwork, and iron doors of every variety for warehouses, insurance, and other purposes.

FOREIGN AND COLONIAL.

Tramway and Waterworks, Russia.

According to the *Official Messenger* (St. Petersburg) of May 27, the Russian Council of Ministers has agreed not to oppose the issue of a loan, amounting to 2,600,000 roubles (about 274,000*l.*), by the municipal authorities of Ekaterinoslav. Of this sum 1,600,000 roubles (about 169,000*l.*) will be allocated to the conversion of the municipal debt, and the remainder to the carrying out of tramway and waterworks extensions and building operations.

Corn Silo Plant, Christiania Harbour.

H.M. Consul at Christiania reports that, according to the local Press, plans have been prepared by the Christiania Harbour Board, and are to be submitted to the Town Council, for the erection at that place of a large corn silo, with a capacity of 8,000 tons, at a cost of between 22,000*l.* and 28,000*l.* The Harbour Board contemplate letting it on a twenty-five years' concession to a private company. Communications might be addressed to "Kristiania Havnestyre," Christiania

Building for the "Banque des Valeurs Industrielles," Paris.
M. J. Hermant, Architect. Reinforced concrete construction by Messrs. Coignet, Limited.

List of Competitions, Contracts, etc.

For some Contracts still open, but not included in this List, see previous issues. Those with an asterisk (*) are advertised in this Number: Competitions, iv.; Contracts, iv. vi. viii. x.; Public Appointments, xvii.; Auction Sales, xxiv.

Certain conditions beyond those given in the following information are imposed in some cases, such as: the advertisers do not bind themselves to accept the lowest or any tender; that a fair wages clause shall be observed; that no allowance will be made for tenders; and that deposits are returned on receipt of a bonâ-fide tender unless stated to the contrary.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

***** It must be understood that the following paragraphs are printed as news, and not as advertisements; and that while every endeavour is made to ensure accuracy, we cannot be responsible for errors that *may* occur.**

Competitions.

JUNE 28.—**Newton Abbot, Devon.**—BUILDINGS FOR AGRICULTURE AND TECHNICAL INSTRUCTION, SEALE-HAYNE COLLEGE, NEWTON ABBOT.—The Governors invite designs and estimates. The assessor is Mr. C. Steward Smith, F.R.I.B.A., of Reading. Premiums 100*l.*, 50*l.*, 30*l.*

* JULY 31. — **Lowestoft.** — SCHOOL. — The Lowestoft Education Committee invite designs for an elementary school for 500 boys at Romanhill. Three premiums are offered. See advertisement in this issue for further particulars.

JULY 31. — **Wellington.** — NEW PARLIAMENT BUILDINGS.—Premiums of 1,000*l.*, 500*l.*, 300*l.*, and 200*l.* are offered for the competitive designs. Particulars from the Minister of Public Works, Wellington, New Zealand.

AUGUST 15.—**Berne.**—MONUMENT.—Designs for the erection of a monument at Berne to celebrate the foundation of the International Telegraph Union. Conditions may be seen in the library of the Royal Institute of British Architects.

SEPTEMBER 12-25.—**Athens.**—COURT OF JUSTICE.—An international competition is instituted by the Ministry of the Interior, for the erection of Court buildings, to cost 160,000*l.* The *Official Gazette* may be seen at the Library of the R.I.B.A.

NOVEMBER 1. — **City of St. Petersburg.** — MONUMENT TO ALEXANDER II.—Particulars in our issue of August 13, 1910.

DECEMBER 29. — **Glasgow.** — DESIGN FOR A BRIDGE.—Designs are invited (Alexander Thomson Travelling Studentship) for a bridge. Preminums of 60*l.* and 20*l.* are offered. See advertisement in issue of December 24 for further particulars.

* NO DATE. — **Holland.** — STAINED GLASS WINDOW.—Designs are invited for a stained glass window to be erected in the University at Groningen. See advertisement in this issue for further particulars.

Contracts.

BUILDING.

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

JUNE 16. — **Neath.** — CHAPEL. — Erection of Baptist chapel and manse at Seven Sisters. Plans and specification seen, and quantities, on deposit of 1*l.* 1s., from Mr. J. S. Griffiths, architect and surveyor, Seven Sisters, Neath.

JUNE 17.—**Creggan, Ireland.**—SCHOOL, ETC.—Erection of a school and residence. Plans and specifications with Mr. R. N. Johnstone, C.E., architect and surveyor, Woodvale, Dundalk.

JUNE 17.—**Halifax.**—STAND.—Erection of a covered stand on the football field. Mr. A. M. Ricketts, Secretary, Thrum Hall Ground, Halifax.

JUNE 17.—**London.**—OFFICES, ETC.—Erection of showrooms and offices, Duke-street, Chelmsford, for the Chelmsford Gas Company. Plans and specification seen, and quantities, on deposit of 2*l.* 2s., from Mr. Frank Whitmore, architect and surveyor, 73, Duke-street, Chelmsford.

JUNE 17.—**Newtownards.**—PALING, ETC.—Erection of a paling to enclose the grounds of the Ards Recreation Society, Ltd. Plans and specification with Mr. Ernest L. Woods, M.R.I.A.I., 97, Main-street, Bangor.

JUNE 17.—**Oxford.**—COTTAGES.—Erection of three cottages at Benson, Oxon. The plans, specifications, etc., with Mr. Edwin G. Hearness, architect, 9, High-street, Wallingford.

JUNE 19.—**Abertridwr.**—SHOPS.—Erection of three shops, etc., for the Senghenydd and Aber Valley Co-operative Society, Ltd. Plans, specifications, and quantities, by Mr. J. H. Phillips, F.R.I.B.A., architect and surveyor, from Mr. Griffith D. Griffiths, Secretary of the Society.

JUNE 19.—**Cardiff.**—SCHOOLS.—Alterations at Marlborough-road and Splotlands Council Schools. Drawings and specifications at the City Engineer's Office, City Hall, Cardiff.

JUNE 19.—**Ennis, Ireland.**—HOUSES.—Erection of seventy-six houses. Particulars from Mr. Michael J. Carmody, Town Clerk, Town Hall, Ennis.

JUNE 19. — **Halifax.** — GREENHOUSES.—Alterations to greenhouses. Plans and specifications with Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax, on deposit of 1*l.*

JUNE 19.—**Saffron Walden.**—LAVATORY.—Erection of a five-stall public lavatory. Plans and specification seen, and particulars from the Borough Surveyor's Office, Hill-street, Saffron Walden.

JUNE 19.—**South Shields.**—URINAL.—Erection of a four-stall public urinal. Quantities and forms of tender obtained, and plans and specification seen with Mr. Leslie Roseveare, A.M.Inst.C.E., Borough Engineer, Municipal-buildings, South Shields.

JUNE 20.—**Aberfan.**—VESTRY.—New vestry to Bethania Chapel. Plans and specification with Mr. T. Edmund Rees, architect, Merthyr Tydfil.

JUNE 20.—**Exeter.**—ADDITIONS, ETC.—Alterations and additions at the Workhouse. Plans and specifications seen, and quantities from the architect, Mr. R. M. Challice, 14, Bedford-circus, Exeter.

JUNE 20.—**Lesmahagow.**—HOUSE.—Alterations on parochial lodging-house. Schedules from Mr. Walter Burnet, Clerk to Parish Council, Lesmahagow. Deposit of 1*l.*

JUNE 20.—**Portsmouth.**—CONVENIENCE.—Erec- of a public convenience. Quantities, on deposit of 2*l.* 2s., from the Borough Engineer, Town Hall, Portsmouth.

JUNE 20.—**York.**—ROOF.—Restoration of the nave roof. Plans and specification with Mr. John Howard, F.A.I., 3, New-street, York. Quantities, from Mr. William Morton, quantity surveyor, 45, John-street, Sunderland. Mr. W. H. Wood, F.R.I.B.A., architect (successor to the late C. Hodgson Fowler, F.S.A.), 20, Collingwood-street, Newcastle-on-Tyne.

JUNE 21.—**Cannock.**—ADDITIONS, ETC.—Alterations and additions to cottage homes. Plans seen, and quantities from Mr. H. M. Whitehead, Engineer's Office, Penkridge, Staffs.

JUNE 21.—**Dover.**—BARRACKS.—Erection of barrack blocks at Fort Burgoyne. Plans and specification with the Director of Barrack Construction, 80, Pall Mall, London, S.W. Deposit of 10s.

JUNE 21.—**Gloucester.**—AISLE.—Addition of an aisle to Hucclecote Church. Quantities from Messrs. Vale & Kingsford, 25, St. Aldate-street, Gloucester, on deposit of 2*l.* Mr. W. Fitzgerald Jones, architect, 25, St. Aldate-street, Gloucester.

JUNE 21.—**Manorcunningham, Ireland.**—ADDITIONS, ETC.—Improvements and additions to manse. Plans and specification with Mr. M'Intyre, architect, Letterkenny.

JUNE 21.—**Modristan.**—LIME-KILN.—Proposed lime-kiln and fencing. Particulars and specifications from Mr. P. Plunkett, Secretary, Tornaross, Mountnugent.

JUNE 22.—**Barnacre.**—VICARAGE.—Erection of a new vicarage. Plans and specification with Messrs. Austin & Paley, architects, Lancaster. Quantities from Messrs. Wright & Son, surveyors, Lancaster.

JUNE 22.—**Gellifaelog.**—VILLAS.—Erection of twenty semi-detached villas. Plans and specifications with Mr. John Mann, jun., architect, 27, Lancaster-villas, Merthyr Tydfil.

JUNE 22.—**Sedbergh.**—HOUSES, ETC.—Erection and completion of three shops and houses. Plans and specifications seen, and quantities from Mr. Stephen Shaw, F.R.I.B.A., architect, Kendal.

JUNE 23.—**Hetton-le-Hole.**—INN.—Alteration of the Colliery Inn, Boldon Colliery. Plans and specification with Mr. B. S. W. Gilbertson, architect and surveyor, 73, Four Lane-ends, Hetton-le-Hole.

JUNE 23.—**Sligo.**—HOUSE, ETC.—Erection of shop and house. Plans and specification with Messrs. Chute & Fowler, civil engineers, Sligo.

JUNE 24.—**Bargoed.**—FIRE-STATION.—Erection of fire-station, etc. Plans and specification with the Surveyor, Mr. J. H. Lewis, A.M.Inst.C.E., Blackwood, Mon., on deposit of 1*l.* 1s.

JUNE 24.—**Dowran, Cornwall.**—HOUSE.—Erection of a farmhouse. Plans and specifications at the Farmhouse at Dowran. Mr. G. Gow, Tregothnan Office, Truro.

JUNE 24.—**Exmouth.** — POLICE-STATION.—Erection of a police-station and Petty Sessions-room. Plans and specifications with the County Architect, Mr. E. H. Harbottle, Queen-street, Exeter. Quantities, on deposit of 3*l.*, from Mr. H. Michelmore, Clerk to the Committee, Castle of Exeter.

JUNE 26.—**Aberbargoed.**—VILLAS.—Erection of a pair of semi-detached villas at Aberbargoed. Plans and specifications with Mr. D. Williams, Duffryn Stores, Aberbargoed. Mr. D. Price Davies, architect, Ystrad Mynach.

JUNE 26.—**Glasgow.**—GRANARY.—Construction of a granary. Drawings seen, and quantities, on deposit of 5*l.*, from the Engineer, 16, Robertson-street, Glasgow.

JUNE 27.—**Breary Banks.**—CHAPEL.—Erection of a Wesleyan chapel. Plans with Mr. T. Trotter, Masham.

* JUNE 27. — **Cardiff.** — MUSEUM. — The Amgueddfa Genedlaethol Cymru National Museum of Wales invite tenders for excavations, foundations, and the building of sub-basement and basement of first portion of the above. See advertisement in this issue for further particulars.

JUNE 27.—**London.**—LAVATORY, ETC.—Constructing a lavatory and additional office accommodation at the Town Hall, Catford. Plans at the Town Hall, Catford (Surveyor's Department), on deposit of 5s.

JUNE 27.—**Salford.**—HOUSE.—Erection of a dwelling-house, Buile-hill Park. Particulars from Borough Engineer, Town Hall, Salford.

JUNE 28.—**Ballyduff, Ireland.**—LIBRARY.—Erection of a free library at Ballyduff, Co. Waterford. Mr. Geo. P. Sheridan, F.R.I.B.A., architect, 1, Suffolk-street, Dublin. Plans and specification at the Carnegie Free Library, Lismore, Ireland.

JUNE 28. — **Yorkshire.**—SCHOOLS.—Alterations and improvements at North Ormesby Derwent-street Council Schools. Mr. J. C. Wrigley, Secretary, Education Offices, County Hall, Northallerton.

* JUNE 29.—**London, W.**—LINEN STORES, ETC.—The Guardians of Fulham invite tenders for erection of linen stores and dispensary extension at the Infirmary, Fulham. See advertisement in this issue for further particulars.

JUNE 30.—**Cornwall.**—SCHOOL.—Erection of a new schoolroom at St. Day. Plans and specifications from Mr. John Eva, Trefula Farm, St. Day.

JUNE 30.—**Falmouth.**—ADDITIONS, ETC.—Alterations and additions to the residence known as Glendurgan. Mr. Wm. Kinnaird-Jenkins, architect, Falmouth.

* JUNE 30. — **Sennen Cove.** — COASTGUARD BUILDINGS.—Tenders are invited for erection of new coastguard buildings at Sennen Cove, near Land's End. See advertisement in this issue for further particulars.

* JULY 3.—**London, S.W.**—CHIMNEY SHAFT.—The Battersea B.C. invite tenders for chimney shaft at Public Baths, Latchmere-road, Battersea. See advertisement in this issue for further particulars.

JULY 3.—**Stopsley.**—SCHOOL.—Erection of a Council school. Drawings and specifications seen, and quantities, on deposit of 1*l.* 1s., from Messrs. Gotch & Saunders, architects, Kettering.

* JULY 4.—**Hemel Hempsted.**—SCHOOL.—The Hemel Hempsted Local Education Authority invite tenders for new school at Two Waters. See advertisement in this issue for further particulars.

* JULY 6. — **Leytonstone.** — CONDENSER PIT, ETC.—The Leyton U.D.C. invite tenders for a condenser pit, foundations for turbo-generators and cooling tower etc., at the E.L. and P. station, Cathall-road, Leytonstone. See advertisement in this issue for further particulars.

JULY 8.—**Cornwall.**—LIFEBOAT-HOUSE, ETC.—Construction of a masonry lifehoat-house and reinforced concrete slipway, near Penlee Point. Plan and specification with the engineer and architect, Mr. W. T. Douglass, M.Inst.C.E., 15, Victoria-street, Westminster, S.W. Quantities on deposit of 1*l.*

* JULY 8. — **Wilmington, Kent.** — SCHOOL.—The Kent Education Committee invite tenders for new Council school at Wilmington, Birchwood Corner, Kent. See advertisement in this issue for further particulars.

JULY 10.—**Bexhill.**—SCHOOL.—Erection of school. Mr. H. P. Burke-Downing, F.R.I.B.A., architect, 12, Little College-street, Westminster, S.W. Plans and conditions of contract with the quantity surveyors, Messrs. J. Leaning & Sons, F.S.I., 38, John-street, Bedford-row, W.C. Deposit of 2*l.* 2s.

JULY 10.—**South Bank-in-Normanby.**—TOWN HALL BUILDINGS.—Purchase and pulling down of the existing Town Hall Buildings at South Bank. Particulars from Mr. C. W. Cockersoll, C.E., Surveyor to the Council

JULY 11.—**Rochester.**—BATH.—Construction of an open-air swimming bath. Drawings and specifications with Mr. William Ba[illegible]s, A.M.Inst.C.E., Guildhall, Rochester.

* JULY 17. — **Gateshead.**—LUNATIC ASYLUM.—The Gateshead Corporation invite tenders for superstructure of new lunatic asylum on the West Duddo Estate, near Stannington and Morpeth. See advertisement in this issue for further particulars.

NO DATE.—**Aberavon.**—HOTEL.—Reconstruction of the Castle Hotel. Plan and specification seen, and particulars, on deposit of 2*l.*, 2s., from Mr. Frank B. Smith, M.S.A., architect and surveyor, Port Talbot.

NO DATE. — **Barrow.** — HOUSE.—Erection of dwelling-house. Plans and specifications at Mr. J. H. Camm's, Church Villa, Barrow, Hull.

BUILDING—*continued.*

The date given at the commencement of each paragraph is the latest date when the tender, or the names of those willing to submit tenders, may be sent in.

NO DATE.—**Bourne.**—COTTAGES.—Erection of cottages. Plans and specifications at the Surveyor's Office, West-street, Bourne.

NO DATE.—**Cwmfelinfach.**—SCHOOL.—Erection of a chapel-school. Mr. R. L. Roberts, M.S.A., Abercarn, on deposit of 1*l.* 1s.

NO DATE. — **Glasgow.** — SCHOOL.—Extensions and alterations at Balerno School. Mr. William Baillie, I.A., architect, 2, West Regent-street, Glasgow.

NO DATE.—**Knottingley.**—VILLA.—Erection of a villa residence. Quantities from Mr. Henry R. Collins, architect, 10, Regent-street, Barnsley.

NO DATE.—**Leeds.**—PICTURE PALACE.—Erection of a picture palace in Holbeck-lane. Quantities from Messrs. Thomas Winn & Sons, architects, surveyors, and valuers, 84, Albion-street, Leeds.

NO DATE.—**Leeds.**—SHOPS, ETC.—Alteration of shop premises. Quantities from Messrs. Thomas Winn & Sons, architects, surveyors, and valuers, 84, Albion-street, Leeds.

NO DATE.—**Milton.**—SCHOOL, ETC.—Erection of a new Council school and cookery centre. Quantities, on deposit of 1*l.* 1s., from Mr. Graham Balfour, Director of Education, County Education Offices, Stafford.

NO DATE.—**Mold.**—COTTAGE.—Erection of caretaker's cottage at the County School. Quantities, on deposit of 1*l.* 1s., from Mr. W. R. Howard Evans, solicitor, Mold, Clerk to the Local Governing Body.

NO DATE.—**Pudsey.**—HALL.—Erection of new Masonic hall. Messrs. Jowett Kendall & Sons, architects, Pudsey.

NO DATE.—**Treorchy.**—CLUB.—Extension of the Treorchy Conservative Club. Mr. W. D. Morgan, M.S.A., architect, 194, Ystrad-road, Pentre, Rhondda.

ENGINEERING, IRON, AND STEEL.

JUNE 19.—**Chatham.**—TANK.—For supply of a steel tank. Mr. A. R. Norman, clerk, 22, High-street, Chatham.

JUNE 21.—**Chirk, North Wales.**—WEIR, ETC.—Construction of a small weir, sluices, and pipe line, for the Right Hon. Lord Trevor. Plans and specification seen, and quantities from Mr. A. Caradoc Williams, 6, Godstall-chambers, Chester.

JUNE 21.—**Dundee.**—CAISSON.—New iron and steel caisson for closing the entrance to the graving dock. Specifications and drawings, on deposit of 2*l.* 2s., from Mr. J. Hannay Thompson, M.Inst.C.E., General Manager and Engineer, Dundee Harbour Trust, General Manager and Engineer's Office, Dundee.

JUNE 26. — **Horncastle.** — BRIDGES.—(1) For taking down the bridge over the canal at Tumby, known as Tumby Bridge, and building a culvert of steel-ribbed concrete tubes; (2) for building a wooden footbridge over the Bain at Fulsby; (3) for taking down and rebuilding the wooden footbridge over the canal at Kirkby-on-Bain; (4) for repairs and improvements to certain property known as Elm Tree-row, in the parish of Langriville. Specifications of the various works at the Council Office. Mr. J. E. Chatterton, Clerk, Council Offices, Horncastle.

JUNE 26.—**London.**—TURBINE GALLERY, ETC.—Construction of a steel turbine gallery at generating station, Exeter-road, Hoe-street, Walthamstow. Plans, specification, and conditions of contract with Mr. G. W. Holmes, A.M.Inst.C.E., Engineer to the Council, Town Hall Annexe, Walthamstow. Deposit of 1*l.* 1s.

JUNE 29.—**Chesterfield.**—RAILWAY WORKS.—Construction of the Mansfield Railway works. Plans and drawings with the engineer, Mr. R. Elliott-Cooper, 15, Dean's-yard, Westminster, S.W. Quantities, on deposit of 10*l.* 10s., from Mr. H. A. Sanders, Secretary, Low Pavement, Chesterfield.

JUNE 30.—**London.**—CONDENSING PLANT.—Erection at the South Kensington generating station of a complete surface condensing plant. Information from His Majesty's Office of Works, Engineering Division, 55, Whitehall, S.W.

✱ JULY 4.—**London, N.W.**—MOTOR FIRE-ENGINE.—The Willesden D.C. invite tenders for a fire brigade petrol motor. See advertisement in this issue for further particulars.

JULY 4.—**Mountain Ash.**—RESERVOIR, ETC.—The construction of an open reservoir, etc. Drawings seen, and quantities from Messrs. Wm. Fox & F. W. La Trobe Bateman, MM.Inst.C.E., 5, Victoria-street, Westminster, on deposit of 10*l.*

JULY 5.—**Abeokuta, Southern Nigeria.**—PLANT, ETC.—Supply and delivery of pumping plant. Specification and form of tender, on deposit of 5*l.*, from Mr. Alfred M. Buchanan, Suffolk House, Laurence Pountney-hill, E.C.

JULY 8.—**Brackenhill.**—RAILWAY. — Construction of the Brackenhill Light Railway. Plans seen and specification and quantities from Mr. C. F. Benough, Engineer to the Light Railway Company, York.

FURNITURE, PAINTING, MATERIALS, etc.

JUNE 17.—**Bristol.**—PAINTING, ETC.—Distempering, painting, etc., at the Female Infirmary. Mr. J. J. Simpson, Clerk to the Guardians, St. Peter's Hospital, Bristol.

JUNE 19.—**Bristol.**—COLOURING, ETC.—Painting, colouring, etc., of schools. Specifications from Mr. Peter Addie, Exchange, Corn-street, Bristol, on deposit of 1*l.* 1s.

JUNE 19.—**Dundee.**—PAINTING.—For painting work at various schools. Mr. John E. Williams, Clerk of the Board, School Board Offices, Dundee.

JUNE 19. — **Nottingham.** — PAINTING. — For painting the engine, engine and boiler house, and superintendent's House at Burton Joyce pumping-station; and the caretaker's house, police-station, fencing, etc., at Mapperley reservoir. Specification, bills of quantities, and forms of tender from Mr. F. W. Davies, Water Engineer, St. Peter's Church-side, Nottingham. Deposit of 1*l.* 1s.

JUNE 21.—**Goole.**—PAINTING.—Internal and external painting, etc., of school. Specifications from Mr. E. L. Harrap, Divisional Clerk, W.R. Education Offices, Goole.

JUNE 27. — **Hastings.** — PAINTING.—Painting cottages, etc. Specification from the Borough Engineer, Mr. P. H. Palmer, M.Inst.C.E., Town Hall, Hastings.

✱ JUNE 27.—**London, E.**—PAINTING, ETC.—The West Ham B.C. invite tenders for painting, cleansing, repairs, etc., of public buildings. See advertisement in this issue for further particulars.

JUNE 27.—**London.**—PAVING BLOCKS.—The Metropolitan Borough of Islington invite tenders for the supply and delivery of creosoted deal paving blocks. Specification and particulars from the Borough Engineer, Mr. J. Patten Barber, at the Town Hall, Upper-street, Islington, N.

JUNE 27.—**Newport, etc.**—PAINTING.—The Great Western Railway invite tenders for cleaning and repainting station buildings, bridges, etc. Specifications seen, and quantities from Mr. A. E. Bolter, Secretary, Paddington Station, London.

JUNE 29. — **Liskeard.** — PAINTING. — For the painting of the Upton Cross and Sharpland schools. Mr. C. A. Hall, District Clerk, Liskeard.

✱ JUNE 29.—**London, W.**—PAINTING, ETC.—The Guardians of Fulham invite tenders for painting, distempering, and other works at Offices, Workhouse, and Infirmary. See advertisement in this issue for further particulars.

JUNE 29.—**Yorkshire.**—CLEANING, ETC.—Painting and cleaning of certain schools. Mr. John Bickersteth, Clerk to the East Riding Education Authority, County Hall, Beverley.

JUNE 30.—**London.**—PAINTING, ETC.—Cleansing and painting various schools for the Leyton U.D.C. Specifications and forms of tender from Mr. William Jacques, A.R.I.B.A., 2, Fencourt, Fenchurch-street, E.C. Deposit of 1*l.*

✱ JULY 5.—**London, S.W.**—PAINTING, ETC.—The Metropolitan Asylums Board invite tenders for cleaning and painting and repairing works at (1) the Western Fever Hospital, Seagrave-road, Fulham, S.W.; and (2) the South-Western Fever Hospital, Landor-road, Stockwell, S.W. See advertisement in this issue for further particulars.

✱ JULY 6.—**Croydon.**—FURNITURE.—The Croydon Education Committee invite tenders for supply of school furniture. See advertisement in this issue for further particulars.

✱ JULY 6.—**London, S.E.**—REPAIRS, PAINTING, ETC.—The Bermondsey Guardians invite tenders for repairing, painting, distempering, whitewashing, and cleaning at the interior and exterior of the administrative offices. See advertisement in this issue for further particulars.

✱ JULY 6.—**London, W.**—PAINTING AND CLEANING.—The Kensington Board of Guardians invite tenders for painting and cleaning work at Infirmary, Marloes-road, Kensington. See advertisement in this issue for further particulars.

NO DATE.—**Blackburn.**—PAINTING.—For painting at various schools. Names to Mr. W. Stubbs, A.M.Inst.C.E., Borough Engineer, Municipal Offices, Blackburn.

NO DATE.—**Nottingham.**—BAPTIST CHURCH.—Limited competition. Particulars from Messrs. Rorke & Jackson, solicitors, King-street, Nottingham.

ROADS, SANITARY, AND WATER WORKS.

JUNE 17.—**Dudley.**—SEWERAGE.—Construction of sewer. Particulars from the Borough Surveyor, Town Hall, Dudley.

JUNE 17.—**Elgin.**—PAVING.—Laying concrete pavement. Specification seen, and quantities from Mr. Acton A. Turriff, Burgh Surveyor, Elgin.

JUNE 17.—**Halifax.**—STREETS.—Private improvement works. Plans and specifications with Mr. James Lord, M.Inst.C.E., Borough Engineer, Town Hall, Halifax. Deposit of 5*l.*

JUNE 17.—**Harlington.**—SEWERAGE.—For the laying of pipe sewer. Particulars from the Surveyor, Mr. W. R. Crabtree, Union Offices, High-street, Doncaster.

JUNE 19.—**London.**—SEWERS, ETC.—Construction of roads and sewers, Palmer's Green. Specification, on deposit of 1*l.* 1s., from Messrs. Hamilton, 66, Northfield-avenue, Ealing.

JUNE 21.—**Birmingham.**—STREETS, ETC.—Improvement of Cotterill's-lane, including excavating, constructing macadam carriageway, etc. Drawings seen, and quantities, on deposit of 2*l.*, from Mr. Henry E. Stilgoe, M.Inst.C.E., City Engineer and Surveyor, The Council House, Birmingham.

JUNE 23. — **North Walsham.** — GRANITE. — Supply of 600 tons of granite. Samples to Mr. E. J. Simpson, Surveyor to the Council, North Walsham.

JUNE 23.—**Seaton.**—WIDENING.—For widening the highway. Particulars from Mr. S. K. Gibson, Highway Surveyor, Grecian Villa, Cockermouth.

JUNE 24.—**Bishop Auckland.**—STREETS.—For making up streets. Plans and specifications seen, and quantities from the Surveyor, Town Hall, Bishop Auckland.

JUNE 26.—**Basford.**—SEWERS.—Providing and laying stoneware pipe sewers. Plans, conditions, and specifications seen, and quantities from Mr. S. Maylan, Engineer and Surveyor, Public Offices, Basford, Nottingham, on deposit of 1*l.* 1s.

JUNE 27.—**Martley.**—STREETS.—Making-up of private streets. Plans and specifications seen, and forms of tender from the Surveyor to the Council, Mr. C. F. Sanderson, Hallow, near Worcester, on deposit of 2*l.*

JUNE 27.—**St. Neots.**—GRANITE.—Supply of broken granite, etc. Mr. John Edey, Town Surveyor, Corn Exchange, St. Neots, Hunts.

JUNE 27.—**Woodford.**—ROAD.—Construction of "pitchmac" roadway. Particulars from Mr. William Farrington, Surveyor to the Council, Council Offices, Woodford Green.

JUNE 28.—**Denton.**—SEWERS.—Construction of sewers and other works. Drawings and specifications seen, and form of tender, on deposit of 1*l.*, from the Surveyor to the Council, Town Hall, Denton, near Manchester.

JUNE 28. — **Scunthorpe.** — GRANITE, ETC.—Supply of basalt or whinstone, etc. Samples to Mr. C. Curtis Gray, Engineer and Surveyor, Council Offices, High-street, Scunthorpe.

JUNE 30.—**Merton.**—ROAD.—For making-up roads. Plan and specification seen, and form of tender, on deposit of 2*l.*, from Mr. G. Jerram, Surveyor, Council Offices, Merton.

JULY 1. — **Cardigan.** — STONE. — Supply of 900 cubic yds. of broken stone. Mr. David Davies, solicitor, Cardigan, Clerk to the Council.

JULY 3.—**Gerrard's Cross.**—DRAINAGE.—Execution of sewerage and sewage disposal works. Plans and details seen, and quantities, on deposit of 5*l.*, from Mr. Arthur Gladwell, Engineer and Surveyor to the Council, Council Offices, 160, High-street, Slough.

JULY 3.—**Stockton.**—SEWERAGE.—Execution of a scheme of main sewerage for Norton. Particulars, on deposit of 5*l.*, from the engineers, Messrs. D. Balfour & Son, civil engineers, 3, St. Nicholas-buildings, Newcastle-on-Tyne.

✱ JULY 4.—**London, N.W.**—ROADMAKING.—The Willesden D.C. invite tenders for roadmaking and paving works in Coverdale-road, Brondesbury, and Palermo-road, Harlesden. See advertisement in this issue for further particulars.

JULY 4.—**Orsett.**—MATERIALS.—Supply of road materials. Forms of tender from Mr. F. T. Johnson, Highway Surveyor, 2, Orsett-road, Grays.

JULY 18.—**Epsom.**—ROADS.—For making up roads. Plans and specifications with Mr. T. E. Ware, Waterloo-road, Epsom.

Public Appointments.

Nature of Appointment.	By whom Advertised.	Salary.	Application to be in
*CLERK OF WORKS	Borough of Taunton	2*l.* 10s. per week	June 23
*ASSISTANT SUPERVISOR OF ROADS	Nyasaland Protectorate	See advertisement in this issue	June 24
*TEACHER OF ARCHITECTURAL DRAWING AND DESIGN	London C.C.	See advertisement in this issue	June 26
*WATERWORKS ENGINEER	Southampton Corporation	300*l.* per annum	July 3

Auction Sales.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*BUILDING MATERIALS, HARROW—At Woodlands-road	Dunn, Soman, & Coverdale	June 28
*FREEHOLD SITE, WESTMINSTER—At the Mart	Jones, Lang, & Co.	July 3
*FREEHOLD ESTATE, SHORTLANDS, KENT—At the Mart	Baxter, Payne, & Lepper	July 5
*FREEHOLD BUILDING LAND AND PUBLIC-HOUSE, EDGWARE—At the Mart	Tuckett & Son	July 17
*THE LEGGATT'S ESTATE, POTTERS BAR—At the Mart	John D. Wood & Co.	July 18

LONDON COUNCILS.

Epsom.—The following plans have been passed by the Rural District Council:—Additions to Wesleyan schools, Burgh Heath, Banstead; church, Oakshade-road, Stoke D'Abbernon; additions to electricity works for the Leatherhead and District Electrical Company, Cobham.

Friern Barnet.—Estimates are to be prepared for making-up a portion of Athenaeum-road. A plan has been passed for Messrs. Hemsby & Son for four houses, Petworth-road.

Greenwich.—The following plans have been passed:—Messrs. F. & H. Higgs, premises in Bishop's-buildings, Thames-street; Mr. William Nash, addition, "Bondicarr," Blackheath Park; Messrs. Baldwin & Co., building Nos. 1 and 2 for the Dignaries, Westcombe Park-road.

Islington.—Repairs are to be carried out to footways in Rhodes-street and Arlington-street at an estimated total cost of 149*l.* and 214*l.* respectively. In connexion with the reconstruction by the London County Council of the tramways from Seven Sisters-road to Southgate-road, *viâ* Green-lanes, Newington Green, and Mildmay Park, the Council are to pave the margins of the three last-mentioned thoroughfares with granite setts at an estimated total cost of 5,705*l.*

Poplar.—The tender of the London Asphalte Company has been accepted for the laying of 2-in. compressed rock asphalt in Newby-place and Brunswick-road at 7s. 11d. per yard super. This price includes five years' free maintenance. The Council has further accepted the quotation of the same firm for similar paving in Cotton-street at 5s. 6d. per yard super., with five years' free maintenance. This latter is a special price offered, in view of the unsatisfactory result of experimental laying of asphalt blocks in this street. The sewer in Brunswick-road is to be reconstructed at an estimated cost of 1,500*l.* Plans have been passed for Messrs. Edwin Evans & Sons for fifteen houses, Ridgdale-street, and for Mr. Clifford Sabey for offices, etc., at Messrs. Achille Serre's premises, White Post-lane.

Twickenham.—Messrs. J. Mowlem & Co., Ltd., are to carry out private street improvement works in Moor Head-road at 649*l.* Plans submitted by Mr. W. H. Mann for additions to laundry, Whitton Dean-road, have been passed.

Wimbledon.—Extensions to the hospital are to be carried out by the Works Department at an estimated cost of 756*l.* Mr Alfred Dodman, King's Lynn, is to construct boiler seatings and supply and fix two cornish boilers at 436*l.* 10s. The following plans have been passed:—Mr. R. J. Thomson, alterations, Woodcote Dairy, Camp-road; Messrs. Whitehead Bros., extensions to garage, 150, Worple-road; Mr. W. H. Baverstock, motor house, 144, Worple-road. Plans have been lodged for Mr. H. W. Rickard for eight houses, Pepys-road, and twelve houses, Dora-road.

PATENTS.

APPLICATIONS PUBLISHED.*

12,102 of 1910.—John Coulburn and James Henry Coulburn: Construction of holdfasts for securing mantelboards to the mantelshelves of fireplaces.

12,359 of 1910.—Horace Henry Dixon: Window-holder for sliding sashes.

12,450 of 1910.—Henry Hubert Thorne and John Ashton: Gullies or stench traps.

16,015 of 1910.—William Henry Baxter: Machinery for washing and cleansing stone and for mixing macadam and concrete.

18,240 of 1910.—Fred Ashworth and James Earnshaw: Ventilating shaft-tops.

20,839 of 1910.—John Jesse James: Knot-holders for the cords of window-blinds and analogous purposes.

21,560 of 1910.—Friederich Mahler: Process for manufacturing porous artificial stones.

24,000 of 1910.—Claude Allen Porter Turner: Reinforced concrete construction

24,660 of 1910.—Raymond Cassinove Penfield: Rotary dry pan, mills for grinding and pulverising clay and similar substances.

25,253 of 1910.—Gustav Adolf Wayss: Cores and moulds for use in casting concrete.

30,403 of 1910.—Richard Warwick: Manufacture and construction of partial wood-block floors and the like.

1,552 of 1911.—Société Anonyme d'Escaut et Meuse: Apparatus for straining or trueing round, solid, or hollow bars.

5,391 of 1911.—Hager and Weidmann, G.m.b.H.: Radiators for heating buildings and the like.

5,992 of 1911.—Paul Piketty: Method of treating iron or steel reinforcing members for use in ferro-concrete or the like articles or structures.

*All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

May 25.—By G. E. SWORDER & SONS.

Much Hadham, Herts.—Homestalls Farm, 39 a. 2 r. 22 p, f.	£1,055
Three enclosures pasture, 15 a. 0 r. 28 p., f.	475
Hatfield Heath, Essex.—Oaklands and ¾ acre, f.	900
Sheering, Essex.—Three cottages, f., w.r. 18*l.* 5s.	250
Sawbridgeworth, Herts.—London-rd., six plots, f.	430

May 31.—By J. M. & R. BALLS.

Bocking, Essex.—Harrietts Farm, 16 a. 0 r. 16 p., f.	500

By RICHARD TURNER & SON.

Bentham, Yorks.—Clifford Hall Estate, 188 a. 0 r. 4 p., f.	7,500

By RICHARDSON.

Guilden Morden, Cambs.—Outlying portions of the Wimpole Estate, 1,911 acres, f.	47,100

By WINCH & SONS.

Cranbrook, Kent.—Friezley and 146 a. 2 r. 6 p., f.	4,200
Loves Corner House and 2 a. 2 r. 21 p., f.	550
Cottage and meadow, 1 a. 1 r. 4 p., f.	275

June 2.—By J. HANNAFORD & SON.

Burrington, Devon.—Three farms, 289 acres, f.	6,130

By OSBORN & MERCER.

Stixwould, Lincs.—Small holdings, 151 acres, f.	4,970

June 7.—By BAXTER, PAYNE, & LEPPER.

Beckenham.—Croydon-rd., Marrington, f., p.	1,000
Bromley.—13, Cambridge-rd., f., p.	730

By FOSTER & CRANFIELD.

Bayswater.—8, Porchester-rd. (s.), u.t. 14½ yrs. at 110*l.*, y.r. 190*l.*	600
Bermondsey.—1 to 10, Edmund-pl.; 46 and 48, Kipling-st., u.t. 45 yrs., g.r. 49*l.*, w.r. 231*l.* 8s.	310

By MARTEN & CARNABY.

Dulwich.—111, Thurlow Park-rd., u.t. 47 yrs., g.r. 16*l.* 7s. 6d., p.	1,200
Herne Hill.—33, Hollingbourne-rd., u.t. 80 yrs., g.r. 9*l.* 15s., p.	400

By W. J. PALMER.

Hornsey.—43, 45, and 47, Clarendon-rd., f., y.r. 65*l.*	855
New Southgate.—Limes-av., two plots, f.	160
Palmers-rd., f.g. rents 15*l.*, reversion in 55 yrs.	325
Wood Green.—309, High-rd. (s.), u.t. 66 yrs., g.r. 10*l.*, y.r. 45*l.*	455

By FREDERICK ELLEN & SON.

Keevil, Wilts.—Keevil Manor House, etc., 132 a., f.	12,710

By DOUGLAS YOUNG & CO.

Westminster.—41, Marsham-st. (s.), f., y.r. 95*l.*	1,600
Kennington.—131, Vauxhall-st., f., w.r. 52*l.*	275
13, Esher-st., c., w.r. 36*l.* 8s.	185
7, 9, and 11, Penton-pl., u.t. 21 yrs., g.r. 18*l.*, y. and w.r. 85*l.* 2s.	350

By JAMES ELEY.

Brothertoft, Lincs.—Farm, cottages, shop, and 160 a. 0 r. 20 p., f.	7,321

By WYATT & SON.

Maudlin, Sussex.—Cottage, f., y.r. 18*l.*	385
East Wittering, Sussex.—Arable field, 4 a. 3 r. 28 p., f.	225

June 8.—By CHESTERTON & SONS.

South Kensington.—28, The Grove, u.t. 35 yrs., g.r. 15*l.*, e.r. 130*l.*	1,125

By JOSEPH STOWER.

Hildenborough, Kent.—Enclosure of woodland, 3 a. 0 r. 19 p., f.	100
Accommodation land, 50 a. 2 r. 10 p., f.	1,500
Seal, Kent.—Two cottages and 2 r. 10 p., f.	260
Hammersmith.—Rylett Cres., etc., f.g. rents 78*l.* 10s., reversion in 79 and 85 yrs.	1,902

By STIMSON & SON.

Fulham.—10, 12, and 14, Reportan-rd., f., w.r. 124*l.* 16s.	850
Camberwell.—48, Denmark-rd., f., y.r. 34*l.*	375
Kennington.—52, Smith-st., f., w.r. 33*l.* 16s.	300
1, Smith-st., f., w.r. 20*l.* 16s.	165
Chadwell Heath.—Mill-la., The Limes, u.t. 42 yrs., g.r. 10*l.*, p.	260
Shepherd's Bush.—Gayford-rd., f.g. rents 10*l.* 10s., reversion in 68 yrs.	200
Clapham.—62, Dorset-rd., u.t. 24 yrs., g.r. 1*l.* 14s., y.r. 46*l.* 12s.	150

By BALCH, BALCH, & TURNHAM.

Highgate.—3, Woodsome-rd., u.t. 51 yrs., g.r. 6*l.* 10s., y.r. 40*l.*	£400

June 9.—By PERCIVAL HODSON.

Palmer's Green.—31, Palmerston-cres., u.t. 87 yrs., g.r. 7*l.*, e.r. 38*l.*	180

By LANGRIDGE & FREEMAN.

Leybourne, Kent.—Highlands and Leybourne Wood Cottage, 58 a. 3 r. 19 p., f.	3,850

By MATTHEWS, MATTHEWS, & GOODMAN.

Worplesdon, Surrey.—Bagshot-rd., plot of land, 1¼ acre, f.	500

By STIMSON & SONS.

Camberwell.—52, Vestry-rd., u.t. 46 yrs., g.r. 4*l.*, w.r. 36*l.* 8s.	360
51 and 53, Lettsom-st., u.t. 42 yrs., g.r. 2*l.*, w.r. 85*l.* 16s.	500
Peckham.—18 and 20, Lisford-st., u.t. 45 yrs., g.r. 7*l.*, w.r. 62*l.* 8s.	380
43 and 45, Manaton-rd., u.t. 52 yrs., g.r. 8*l.*, w.r. 70*l.* 4s.	390
Brixton.—33, Arlingford-rd., u.t. 63 yrs., g.r. 6*l.* 10s., w.r. 42*l.* 12s.	160
Herne Hill.—51 and 53, Milkwood-rd., u.t. 49 and 55 yrs., g.r. 4*l.*, w. and e.r., 78*l.*	375

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; b.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

TERMS OF SUBSCRIPTION.

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PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

Per 1000 Alongside, in River.	£ s. d.
Best Stocks	1 13 0
Picked Stocks for Facings	2 10 0

Per 1000, Delivered at Railway Depôt.

	£ s. d.		£ s. d.
Flettons	1 9 0	Double Headers	13 7 6
Best Fareham Red	3 12 0	One Side and two Ends	17 7 6
Best Red Pressed Ruabon Facing	5 0 0	Two Sides and one End	18 7 6
Best Blue Pressed Staffordshire	3 15 0	Splays & Squints	15 17 6
Do. Bullnose	4 0 0	Best Dipped Salt Glzd. Str'tch'rs	10 17 6
Best Stourbridge Fire Bricks	3 14 0	Headers	10 7 6
GLAZED BRICKS.		Quoins, Bullnose, and Flats	14 7 6
Best White and Ivory Glazed Stretchers	10 17 6	D'ble Stretchers	16 7 6
Headers	10 7 6	Double Headers	13 7 6
Quoins, Bullnose, and Flats	14 7 6	One Side and two Ends	17 7 6
D'ble Stretchers	16 7 6	Two Sides and one End	18 7 6
		Splays & Squints	15 17 6

Second Quality White and Dipped Salt Glazed, £1 5s. per 1000 less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered
Thames Ballast	5 3	" "
Best Portland Cement	29 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 6d. per yard delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly dpt.

STONE.

Per Ft. Cube.

	s. d.
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½
PORTLAND STONE (20 ft. average)—	
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1
White Basebed, delivered on road waggons Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½

STONE (*Continued*).

Per Ft. Cube, delivered at Railway Depôt.

	s.	d.		s.	d.
Ancaster in blocks..	1	10	Closeburn Red Freestone	2	0
Beer in blocks	1	6	Red Mansfield Freestone	2	4
Greenshill in blocks	1	10	Talacre & Gwespyr Stone	2	8
Darley Dale in blocks	2	4			
Red Corsehill in blocks	2	3			

YORK STONE—*Robin Hood Quality.*

Per Ft. Cube, Delivered at Railway Depôt. s. d.

Scappled random blocks 2 10

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landings to sizes (under 40 ft. super.) 2 3
6 in. rubbed two sides ditto, ditto 2 6
3 in. sawn two sides slabs (random sizes) 0 11½
2 in. to 2½ in. sawn one side slabs (random sizes) 0 7½
1½ in. to 2 in. ditto, ditto 0 6

HARD YORK—

Per Ft. Cube, Delivered at Railway Depôt.

Scappled random blocks 3 0

Per Ft. Super., Delivered at Railway Depôt.

6 in. sawn two sides landing to sizes (under 40 ft. super.) 2 8
6 in. rubbed two sides ditto 3 0
3 in. sawn two sides slabs (random sizes) 1 2
2 in. self-faced random flags 0 5

SLATES.

Per 1000 of 1200 at Railway Depôt.

In. In.	£	s.	d.	In. In.	£	s.	d.
20×10 best blue Bangor	13	2	6	20×10 best Eur'ka unfading green	15	17	6
20×12 ditto	13	17	6	20×12 ditto	18	7	6
20×10 1st quality ditto	13	0	0	18×10 ditto	13	5	0
20×12 ditto	13	15	0	16×8 ditto	10	5	0
16×8 ditto	7	5	0	20×10 permanent green	11	12	6
22×10 best blue Portmadoc	12	12	6	18×10 ditto	9	12	6
16×8 ditto	6	12	6	16×8 ditto	6	12	6

TILES.

At Railway Depôt.

	s.	d.		s.	d.
Best plain red roofing (per 1000)	42	0	Do. Ornamental (per 1000)	52	6
Hip and Valley (per doz.)	3	7	Hip and Valley (per doz.)	4	0
Best Broseley (per 1000)	50	0	Best Ruabon red, brown, or brindled (Edw'ds) (per 1000)	57	6
Do. Ornamental (per 1000)	60	0	Do. Ornamental (per 1000)	50	0
Hip (per doz.) ...	4	0	Hip (per doz.) ...	4	0
Valley (per doz.)	3	0	Valley (per doz.)	3	6
Best "Hartshill" brand, plain sand-faced (per 1000) ...	50	0	Staffords. (Hanley) Reds or Brindled (per 1000)	42	6
Do. pressed (per 1000)	47	6	Hand-made sand-faced (per 1000)	45	0
			Hip (per doz.) ...	4	0
			Valley (per doz.)	3	6

WOOD.

BUILDING WOOD. At per standard.

	£	s.	d.		£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	14	0	0	...	15	10	0
Deals: best 3 by 9	13	10	0	...	14	10	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	10	0	...	12	10	0
Battens: best 2½ by 6 and 3 by 6 ...	0	10	0	less than 7 in. and 8 in.			
Deals: seconds	1	0	0	less thn best.			
Battens: seconds	0	10	0	»		»	
2 in. by in. and 2 in. by 6 in. ...	9	10	0	...	10	10	0
2 in. by 4½ in. and 2 in. by 5 in.	9	0	0	...	10	0	0
Foreign Sawn Boards—							
1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.			
¾ in.	1	0	0	»			
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft.						
	5	0	0	...	5	10	0
Seconds	4	10	0	...	5	0	0
Small timber (8 in. to 10 in.) ...	3	17	6	...	4	0	0
Small timber (6 in. to 8 in.)	3	5	0	...	3	10	0
Swedish balks	2	12	6	...	3	0	0
Pitch-pine timber (30 ft. average)	4	10	0	...	5	5	0

JOINERS' WOOD. At per standard.

White Sea: first yellow deals, 3 in. by 11 in.	24	10	0	...	25	10	0
3 in. by 9 in.	22	10	0	...	23	10	0
Battens 2½ in. and 3 in. by 7 in.	17	0	0	...	18	0	0
Second yellow deals, 3 in. by 11 in.	19	0	0	...	20	0	0
» » 3 in. by 9 in.	18	0	0	...	19	10	0
Battens, 2½ in. and 3 in. by 7 in.	14	0	0	...	15	0	0
Third yellow deals, 3 in. by 11 in. and 9 in.	14	0	0	...	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	10	0	...	12	10	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	10	0	...	22	10	0
Do. 3 in. by 9 in.	18	10	0	...	19	10	0
Battens	14	0	0	...	15	0	0
Second yellow deals, 3 in. by 11 in	16	10	0	...	17	10	0
Do. 3 in. by 9 in.	15	0	0	...	16	0	0
Battens	11	10	0	...	12	10	0
Third yellow deals, 3 in. by 11 in.	13	10	0	...	14	10	0
Do. 3 in. by 9 in.	13	0	0	...	14	0	0
Battens	10	10	0	...	11	0	0
White Sea and Petersburg—							
First white deals, 3 in. by 11 in.	15	0	0	...	16	0	0
» » 3 in. by 9 in.	14	0	0	...	14	10	0
Battens	11	10	0	...	12	10	0
Second white deals, 3 in. by 11 in.	14	0	0	...	15	0	0
» » 3 in. by 9 in.	13	0	0	...	14	0	0
Battens	10	10	0	...	11	0	0
Pitch-pine: deals	19	0	0	...	21	0	0
Under 2 in. thick extra	0	10	0	...	1	0	0
Yellow Pine—First, regular sizes	44	0	0	upwards.			
Oddments	32	0	0	»			
Seconds, regular sizes	33	0	0	»			
Oddments	28	0	0	»			
Kauri Pine—Planks per ft. cube.	0	3	6	...	0	5	0

WOOD (*Continued*).

JOINERS' WOOD (*continued*)—

	£	s.	d.		£	s.	d.
Danzig and Stettin Oak Logs—							
Large, per ft. cube	0	3	0	...	0	3	9
Small » »	0	2	6	...	0	2	6
Wainscot Oak Logs, per ft. cube	0	5	6	...	0	6	0
Dry Wainscot Oak, per ft. sup. as inch	0	0	8½	...	0	0	9½
¾ in. do. do.	0	0	7	...	—		
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch..	0	0	10	...	0	1	1
Selected, Figury, per ft. super. as inch	0	1	6	...	0	2	6
Dry Walnut, American, per ft. super. as inch	0	0	10	...	0	1	0
Teak, per load	18	0	0	...	22	0	0
American Whitewood planks, per ft. cube	0	4	0	...	0	5	0
Prepared Flooring, etc.—	Per square.						
1 in. by 7 in. yellow, planed and shot	0	13	6	...	0	17	0
1 in. by 7 in. yellow, planed and matched	0	14	0	...	0	18	0
1¼ in. by 7 in. yellow, planed and matched	0	16	0	...	1	0	0
1 in. by 7 in. white, planed and shot	0	12	0	...	0	14	6
1 in. by 7 in. white, planed and matched	0	12	6	...	0	15	0
1¼ in. by 7 in. white, planed and matched	0	15	0	...	0	16	6
¾ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0	11	0	...	0	13	6
1 in. by 7 in. » »	0	14	0	...	0	18	6
¾ in. by 7 in. white » »	0	10	0	...	0	11	0
1 in. by 7 in. » »	0	12	9	...	0	15	0

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton.						
	£	s.	d.		£	s.	d.
Rolled Steel Joists, ordinary sections	7	0	0	...	7	10	0
Compound Girders, ordinary sections	9	0	0	...	10	0	0
Steel Compound Stanchions	11	0	0	...	12	0	0
Angles, Tees, and Channels, ordinary sections	9	0	0	...	10	0	0
Flitch Plates	9	0	0	...	9	10	0
Cast Iron Columns & Stanchions, including ordinary patterns ...	7	10	0	...	8	10	0

METALS.

	Per ton, in London.						
	£	s.	d.		£	s.	d.
IRON—							
Common Bars	8	10	0	...	9	0	0
Staffordshire Crown Bars, good merchant quality	8	15	0	...	9	5	0
Staffordshire "Marked Bars"	10	10	0	...	—		
Mild Steel Bars	8	15	0	...	9	5	0
Hoop Iron, basis price	9	5	0	...	9	10	0
» » Galvanised	17	0	0	...	—		
(*And upwards, according to size and gauge.)							
Sheet Iron Black—							
Ordinary sizes to 20 g.	9	15	0	...	—		
» » 24 g.	10	15	0	...	—		
» » 26 g.	12	5	0	...	—		
Sheet Iron, Galvanised, flat, ordinary quality—							
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	15	0	0	...	—		
Ordinary sizes to 22 g. and 24 g.	15	10	0	...	—		
» » 26 g.	16	10	0	...	—		
Sheet Iron, Galvanised, flat, best quality—							
Ordinary sizes to 20 g.	18	0	0	...	—		
» » 22 g. and 24 g.	18	10	0	...	—		
» » 26 g.	20	0	0	...	—		
Galvanised Corrugated Sheets—							
Ordinary sizes, 6ft. to 8ft. 20 g.	14	10	0	...	—		
» » 22 g. and 24 g.	14	15	0	...	—		
» » 26 g.	16	5	0	...	—		
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. to 20 g. and thicker	12	0	0	...	—		
Best Soft Steel Sheets, 2 g. & 24 g.	13	0	0	...	—		
» » » 26 g.	15	0	0	...	—		
Cut Nails, 3 in. to 6 in.	10	10	0	...	11	0	0

(Under 3 in., usual trade extras.)

LEAD, &c.

	£	s.	d.		£	s.	d.
LEAD—Sheet, English, 4lb. and up	16	12	6	...	—		
Pipe in coils	17	2	6	...	—		
Soil pipe	20	2	6	...	—		
Compo pipe	20	2	6	...	—		
ZINC—Sheet—	In casks of 10 cwt.						
Vielle Montagne	31	0	0	...	—		
Silesian	30	12	6	...	—		
Zinc, in bundles, 1s. per cwt. extra.							
COPPER—							
Strong Sheet .....per lb.	0	1	0	...	—		
Thin » ..... »	0	1	1	...	—		
Copper nails ..... »	0	0	10	...	—		
Copper wire ..... »	0	0	10	...	—		
BRASS—							
Strong Sheet ..... »	0	0	11	...	—		
Thin ..... »	0	1	0	...	—		
TIN—English Ingots..... »	0	2	0	...	—		
SOLDER—Plumbers' ..... »	0	0	8½	...	—		
Tinmen's ..... »	0	0	11	...	—		
Blowpipe ..... »	0	1	2	..	—		

ENGLISH SHEET GLASS IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

15 oz. thirds	2½d.	26 oz. fourths	3½d.
» fourths	1½d.	32 oz. thirds.....	5½d.
21 oz. thirds.....	3½d.	» fourths	4½d.
» fourths	2½d.	Fluted Sheet, 15 oz.	3½d.
23 oz. thirds.....	4½d.	» 21 oz.	4½d.

ENGLISH ROLLED PLATE IN CRATES OF STOCK SIZES.*

Per Ft., Delivered.

⅛ Hartley's	2d.	Figured Rolled, Oxford Rolled, Oceanic, Arctic, Muffled, and Rolled Cathedral, white.....	3½d.
3/16 »	2½d.		
¼ »	2¾d.	Ditto, tinted.....	5d.

* Not less than three crates.

OILS, &c.

		£	s.	d.
Raw Linseed Oil in pipes	per gallon	0	3	8
» » » in barrels.....	»	0	3	9
» » » in drums	»	0	3	11
Boiled » » in barrels.....	»	0	3	11
» » » in drums	»	0	4	2
Turpentine in barrels	»	0	4	0
» in drums	»	0	4	2
Genuine Ground English White Lead, per ton		21	10	0
Red Lead, Dry	»	20	0	0
Best Linseed Oil Putty	per cwt.	0	11	0
Stockholm Tar	per barrel	1	12	0

VARNISHES, &c.

	Per gallon. £	s.	d.
Fine Pale Oak Varnish	0	8	0
Pale Copal Oak	0	10	6
Superfine Pale Elastic Oak	0	12	6
Fine Extra Hard Church Oak.....	0	10	0
Superfine Hard-drying Oak, for seats of Churches	0	14	6
Fine Elastic Carriage	0	12	0
Superfine Pale Elastic Carriage	0	16	0
Fine Pale Maple	0	10	0
Finest Pale Durable Copal	0	18	0
Extra Pale French Oil	1	1	0
Eggshell Flating Varnish	0	18	0
White Pale Enamel.....	1	4	0
Extra Pale Paper	0	12	0
Best Japan Gold Size	0	10	6
Best Black Japan.....	0	16	0
Oak and Mahogany Stain	0	9	0
Brunswick Black	0	8	0
Berlin Black	0	16	0
Knotting	0	10	9
French and Brush Polish	0	10	6

TO CORRESPONDENTS.

NOTE.—All communications with respect to literary and artistic matters should be addressed to "THE EDITOR" (and not to any person by name); those relating to advertisements and other exclusively business matters should be addressed to "THE PUBLISHER," and *not* to the Editor.

All communications must be authenticated by the name and address of the sender, whether for publication or not. No notice can be taken of anonymous communications.

The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples sent to or left at this office, unless he has specially asked for them.

All drawings sent to or left at this office for consideration should bear the owner's name and address on either the face or back of the drawing. Delay and inconvenience may result from inattention to this.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance.

N.B.—Illustrations of the First Premiated Design in any important architectural competition will always be accepted for publication by the Editor, whether they have been formally asked for or not.

TENDERS.

THE CORONATION. — In consequence of the Coronation holidays, we go to press on Tuesday next, the *Builder* being published on Wednesday. All communications must reach the Editor by first post on Tuesday morning, except Tenders, which may be received up to 9 a.m.

BLETCHLEY (Bucks).—For the erection of house on golf course, Bletchley, for Mrs. Sinfield. Mr. W. B. Stonebridge, architect, Bedford and Woburn Sands:—

C. Negus	£466	J. Edwards‡	£375
J. Bonner.....	379	T. Yirrell‡	375

‡ Both tendered on revised specification, resulting:—

J. Edwards	£399	T. Yirrell, Bletchley*	£396

CHIPPING WYCOMBE.—For construction of an open-air swimming-bath. Mr. T. J. Rushbrooke, Borough Surveyor, 77, Easton-street:—

Langley & Johnson	£283 9 9
A. F. Lee	238 0 0
Exors. of J. Smith	235 0 0
G. H. Gibson & Sons, High Wycombe*	183 0 0

CLIFTON (Beds).—For the erection of Rectory farmhouse, for the Rev. J. Pycock, B.D. Mr. W. B. Stonebridge, Architect and Diocesan Surveyor, Bedford and Woburn Sands:—

E. Jones	£654	G. Wrycroft & Sons	£555
Coleman & Co.	634	Wartar & Dunstall, Bedford*	550
C. Negus	630		
C. H. Wright	572		

DAWLISH.—For alterations to the London Hotel, for Mr. H. J. Hopkins. Mr. R. A. Churchward, architect, 353, Strand, W.C. Quantities by the architect:—

	Estimate A.	Estimate B.
A. E. Brock	£2,200 0	£35 10
F. Friend	1,998 0	39 0
J. J. Hayman & Sons.....	1,886 0	41 8
W. B. Crocker	1,884 10	50 0
G. Pollard & Co., Ltd.	1,873 0	42 10
Wilkins & Sons	1,834 0	40 0
Lamacraft & Son.....	1,759 0	37 0
H. Pittard & Son.....	1,745 0	36 10
A. J. Slocombe.....	1,737 10	32 5
H. J. Spiller & Son, Taunton*	1,695 0	36 0
R. Love & Co.	1,562 0	36 0

FINCHAM.—For erection and completion of semi-detached houses. Mr. Louis F. Eagleton, architect and surveyor, King-street, King's Lynn. Quantities by the architect:—

J. S. Johnson & Son	£540	J. W. Collins	£510
Geo. Riches	524	F. W. Ashby, Ltd.	497
Hall & Lawson	520	S. Hampton	490
H. W. Barnes & Co.	515	F. & S. Dickerson	489

GRIMSBY.—For addition of bathrooms to public convenience, Oxford-street. Mr. H. Gilbert Whyatt, A.M.Inst.C.E., Borough Engineer and Surveyor:—

Hewins & Goodhand	£450 0 0	J. W. Richardson	£372 10 0
Thompson Bros.	417 10 0	Swaby & Walsham	368 10 0
W. Gilbert	406 10 6	Borrill & Cheesman	362 0 0
G. H. Hipkin	398 15 8	E. Smith, Grimsby*	336 0 0
W. Kirton	381 2 1		

HALIFAX.—Accepted for erection of ten houses. Mr. L. Coates, architect, 10, Central-street, Halifax. Quantities by the architect:—

Masons and Bricklayers: Pickles Brothers, Gibralter, Halifax.
Joiner, etc.: H. Naylor, Lee Mount, Halifax
Plumber and Glazier: J. Turner, Bell Hall, Halifax.
Slaters, Plasterers, and Concreters: J. Bancroft & Son, Winding-road, Halifax
Painters: J. M. Wilson, 2, West Hill-terrace, Halifax.
£2,237 7 10

HEREFORD.—For vicarage house, for Holy Trinity, Hereford, for the Vicar and Churchwardens. Messrs. Nicholson & Hartree, architects, Offa-street, Hereford. Quantities by Messrs. W. H. Barber & Son, 22, Buckingham-street, Adelphi, London, W.C.:—

J. T. Jones	£2,400 0 0	W. P. Lewis & Co.	£1,630 0 0
W. C. Bolt	1,700 0 0	C. Cooke	1,594 0 0
W. Powell	1,684 0 0	W. H. Peake, White Horse-street, Hereford*	1,555 12 2
Beavan & Hodges	1,674 0 0		
Bowers & Co.	1,666 0 0		

LEEK.—For alterations to the Sea Lion Inn. Mr. W. E. Beacham, C.E., Surveyor, Town Hall, Leek. Quantities by the Surveyor:—

T. Grace	£310 0	J. Heath & Sons‡	£299 10
S. Salt	303 13		

[All of Leek.]
[‡ Recommended for acceptance.]

LETCHWORTH.—For erection of a block of four cottages, for the Hitchin Rural District Council. Mr. J. C. Hooper, Surveyor, Hitchin. Quantities by Surveyor:—

W. J. Gregory	£825 0	F. Newton	£644 0
G. W. Souster	616 15	Jeffs Bros.	660 0
Beckley & Turpie	615 0	Palmer & Ray, Letchworth, Herts*	535 0
A. Collins	630 0		
Tarrier & Bidwell	640 0		

MAULDEN (Beds).—For the erection of buildings for small holdings (houses and farm buildings) on the Duke of Bedford's Maulden Great Farm Small Ownership Scheme. Mr. W. B. Stonebridge, architect, Bedford and Woburn Sands:—

No. 2, for Mr. W. F. Cole.

C. H. Wright	£730	Richardson & Patman, Flitwick‡	£605
C. Sharp	698		

‡ Accepted, revised.

No. 3, for Mr. H. Culley.

Mann	£676	Richardson & Patman, Flitwick‡	£529
W. T. Sharpe	609		
E. Martin	607		

‡ Accepted, revised.

No. 4, for Mr. H. Woodward.
C. D. Woodward, Biggleswade £500

No. 5 (part), for Mr. C. Kilby.

D. Mann, jun.	£919	Richardson & Patman	£659
W. T. Sharpe	715		

[Plan revised and work carried out by F. W. King, Langford, £536.]

No. 6 (part), for Mr. R. P. Burton.
F. Titmuss, Leagrave £510

No. 7 (part), for Mr. A. Pope.
C. D. Woodward, Biggleswade £537

No. 8, for Mr. P. D. Underwood.

W. T. Sharpe	£715	D. Mann, sen.	£690
G. Botsford	714	C. Sharp, Flitwick‡	661

‡ Accepted, revised.

Nos. 9 and 10 (buildings only), for Messrs. W. & F. Woodward.
C. D. Woodward, Biggleswade £102 10s. per set.

MACCLESFIELD.—For alterations at the Infirmary. Mr. N. Hartley Hacking, architect, Manchester. Quantities by architect:—

T. Roylance Lawton	£1,125	J. Clayton	£1,052
Gorton & Wilson	1,090	B. Cooke*	988
G. Roylance & Co., Ltd.	1,070		

[All of Macclesfield.]

MEPPERSHALL (Beds).—For the rebuilding of Rectory Farm Buildings, for Rev. R. Isherwood. Mr. W. B. Stonebridge, Architect and Diocesan Surveyor, Bedford and Woburn Sands:—

C. Negus	£331	Richardson & Patman, Flitwick*	£193
Warton & Dunstall	265		
A. C. Bland	210		

NEWPORT.—For erection of a house, for Mrs. A. J. W. Jones, Newport. Messrs. Alfred Swash & Son, F.R.I.B.A., architects, Midland Bank-chambers, Newport, Mon.:—

E. F. King & Co.	£1,376	H. J. Herbert & Co.	£1,200
G. Edwards	1,299	J. H. Williams	1,190
H. Thomas & Son	1,295	C. H. Reed	1,185
J. J. Partridge	1,292	C. Shopland	1,169
Kirby & Westacott	1,245	F. Leadbeter, Newport*	1,138
H. Saunders	1,236		
Morris & Biddle	1,230		

NEWTON ABBOT.—For erection of a new laundry. Mr. S. Segar, F.I.A.S., Union-street, Newton Abbot:—

Wilkins Bros.	£239 16 6	H. Mills	£207 0 0
Parker Bros.	239 0 0	W. H. Taylor, Teignmouth*	197 0 0
L. Bearne	228 9 6		

NORFOLK.—For reconstruction of Stow Bridge. Mr. Louis F. Eagleton, architect and surveyor, King-street, King's Lynn. Quantities by the architect:—

Dye & Allen	£1,991 0 0	Hall & Lawson	£1,586 0 0
J. O. Brittell & Co.	1,764 10 10	W. A. Bardell	1,500 0 0
		F. & S. Dickerson	1,369 0 0

RENHOLD (Beds).—For additions to Renhold Vicarage, for Mr. C. H. Polhill, J.P. Mr. W. B. Stonebridge, Architect and Diocesan Surveyor, Bedford and Woburn Sands:—

C. Negus £195
Warten & Dunstall, Bedford‡ 195
‡ On reversion, accepted at £149.

STAFFORD.—For engine-house at pumping-station. Mr. W. Plant, Waterworks Engineer, Borough Hall, Stafford. Quantities by Engineer:—
W. Hendrick & Son, Walsall* £929 10

SWAFFHAM.—For new operating-room, etc., at Hospital. Messrs. W. O. & P. Milne, architects, 16, Gt. James-street, Bedford-row, W.C.:—

Tash & Langley	£287 0	F. W. Ashby, Ltd.	£255 10
W. Peeke-Vout	265 0	G. Jeffries, Swaffham*	174 15
J. G. Culling	256 17		

WISBECH.—For pulling down old buildings and erecting Sunday school, for the Congregational Church, Wisbech. Mr. W. H. Davis, architect, 2, York-row, Wisbech. Quantities by the architect:—
Wilkinson & Son, Elm* £670

WOBURN SANDS (Beds).—For drainage works to Brewery stores, for Messrs. Benskins, Ltd. Mr. W. B. Stonebridge, architect, Bedford and Woburn Sands:—

C. Sharp	£153	A. E. Tyers, Woburn Sands*	£142
Cooper & Slaughter	144		

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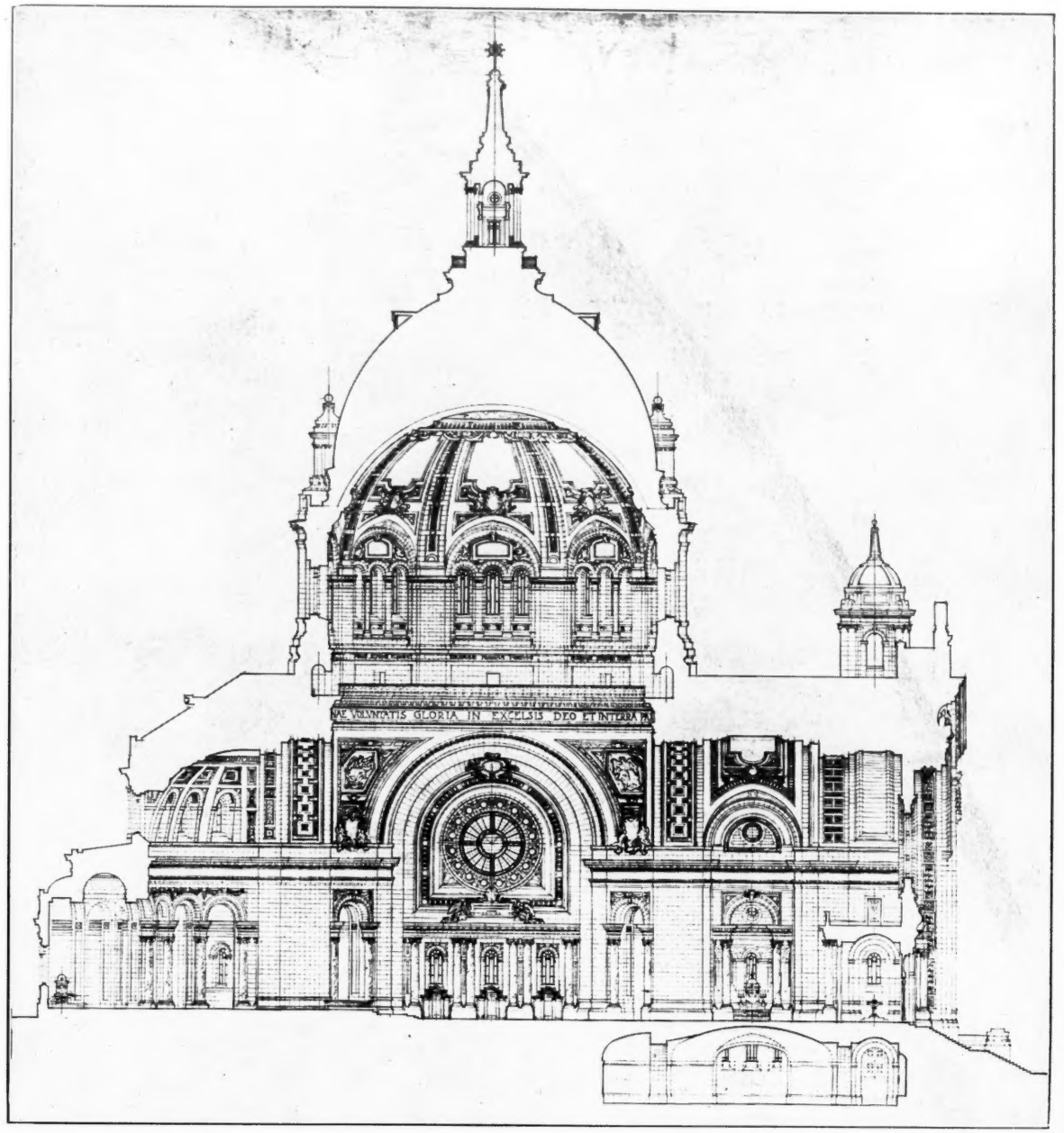

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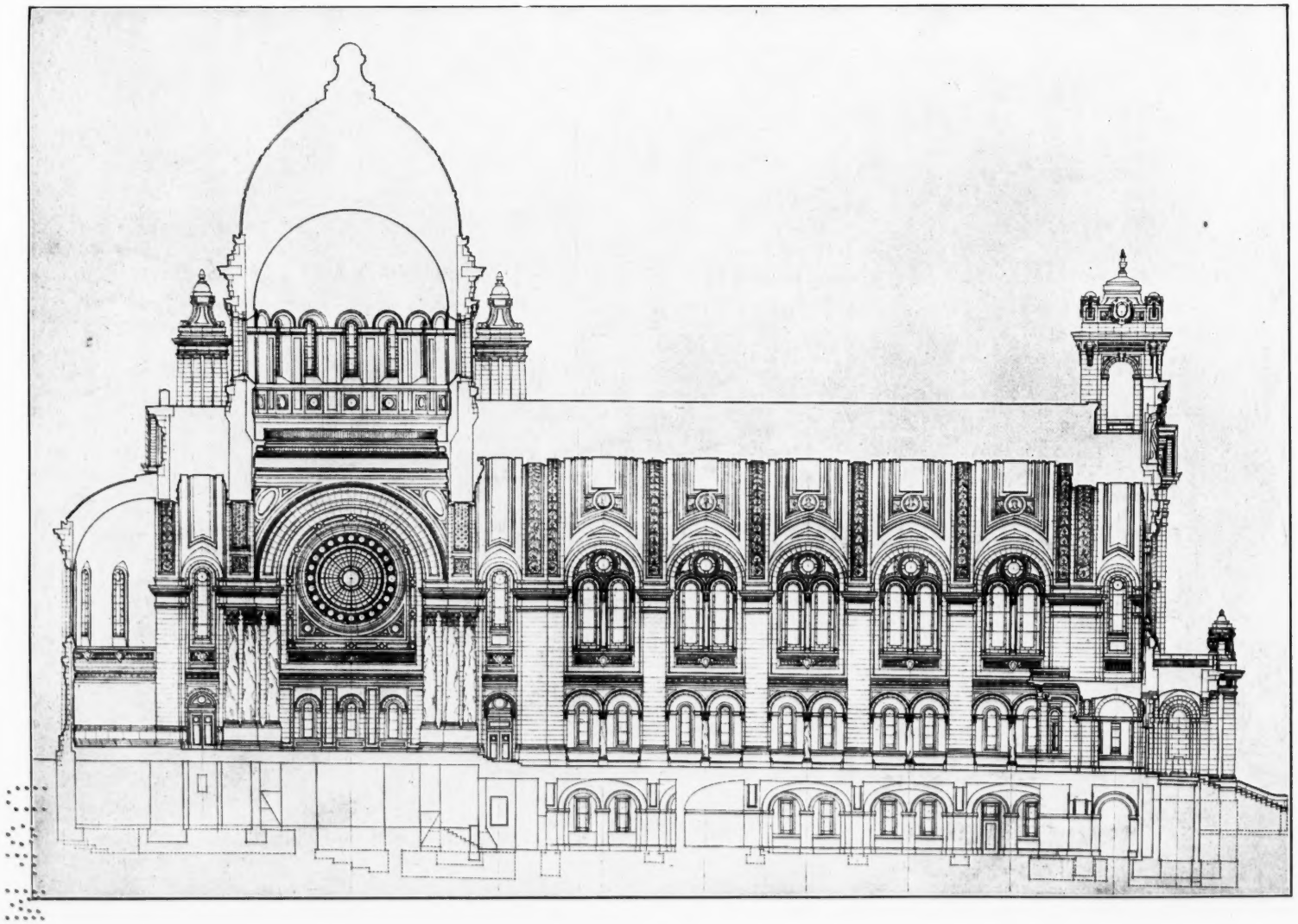

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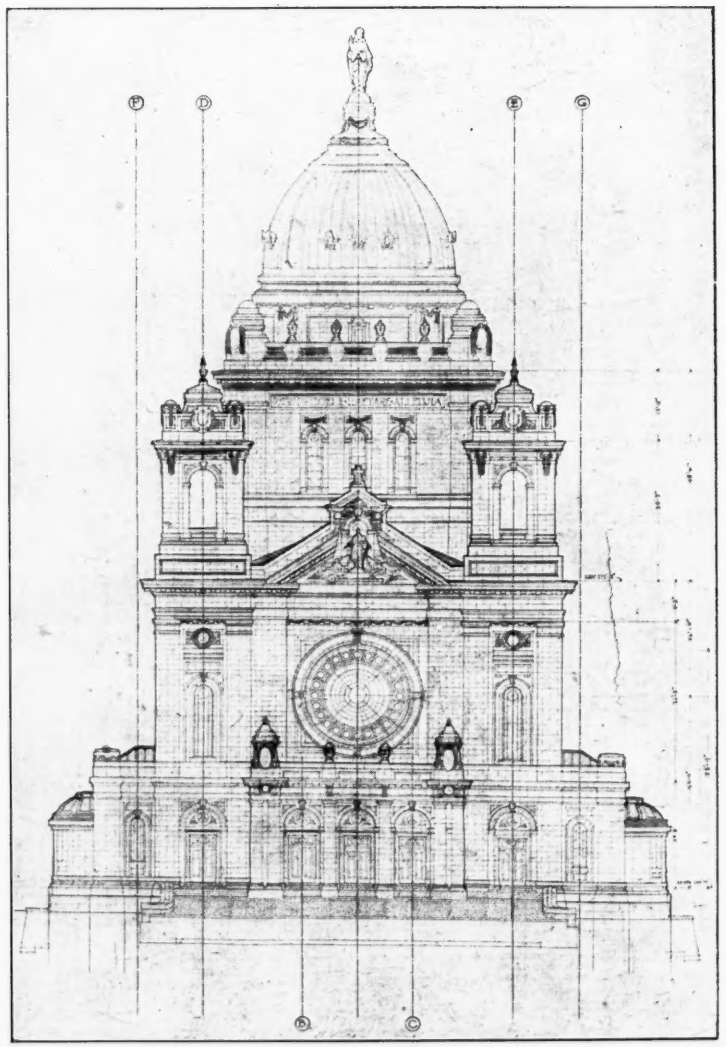

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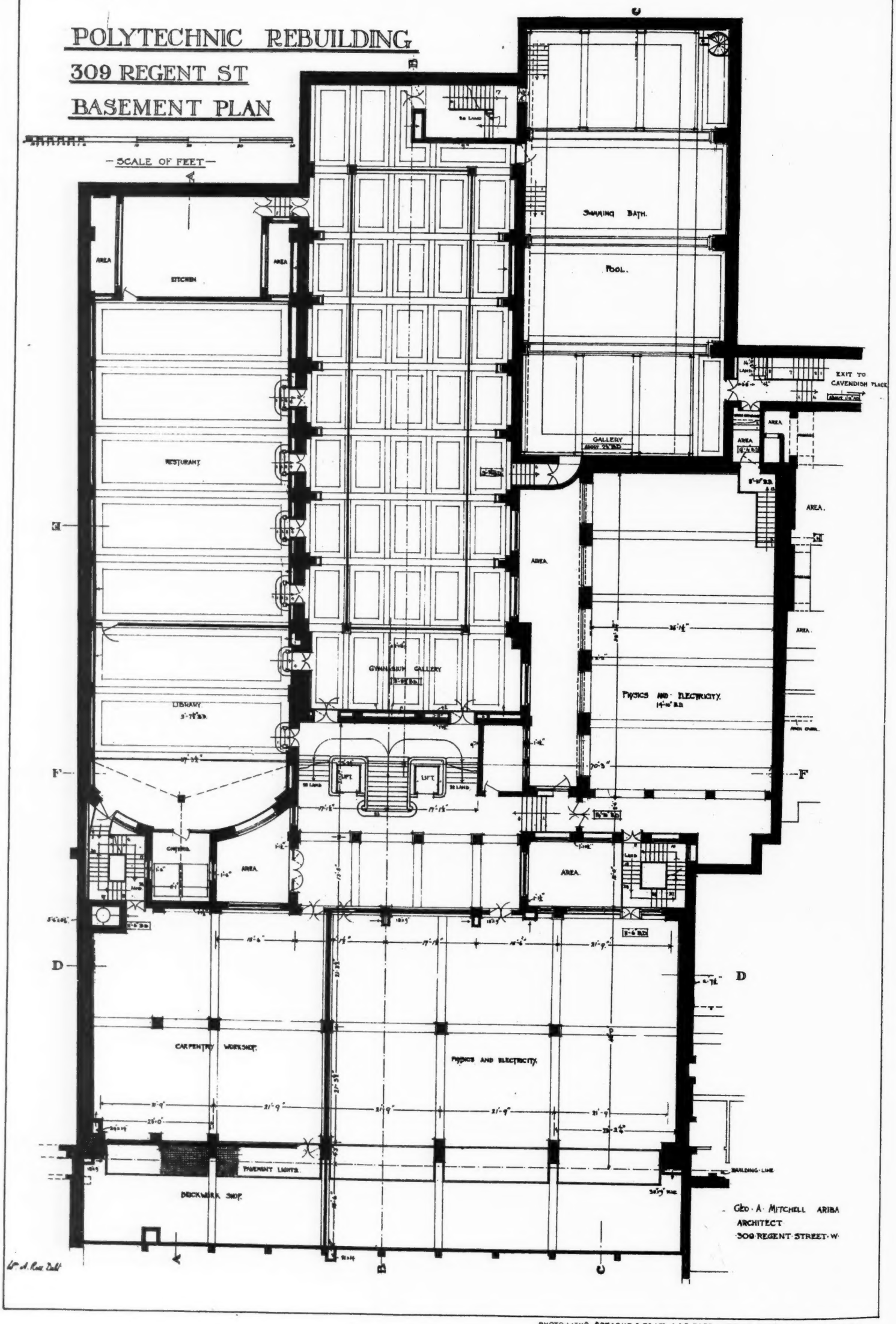

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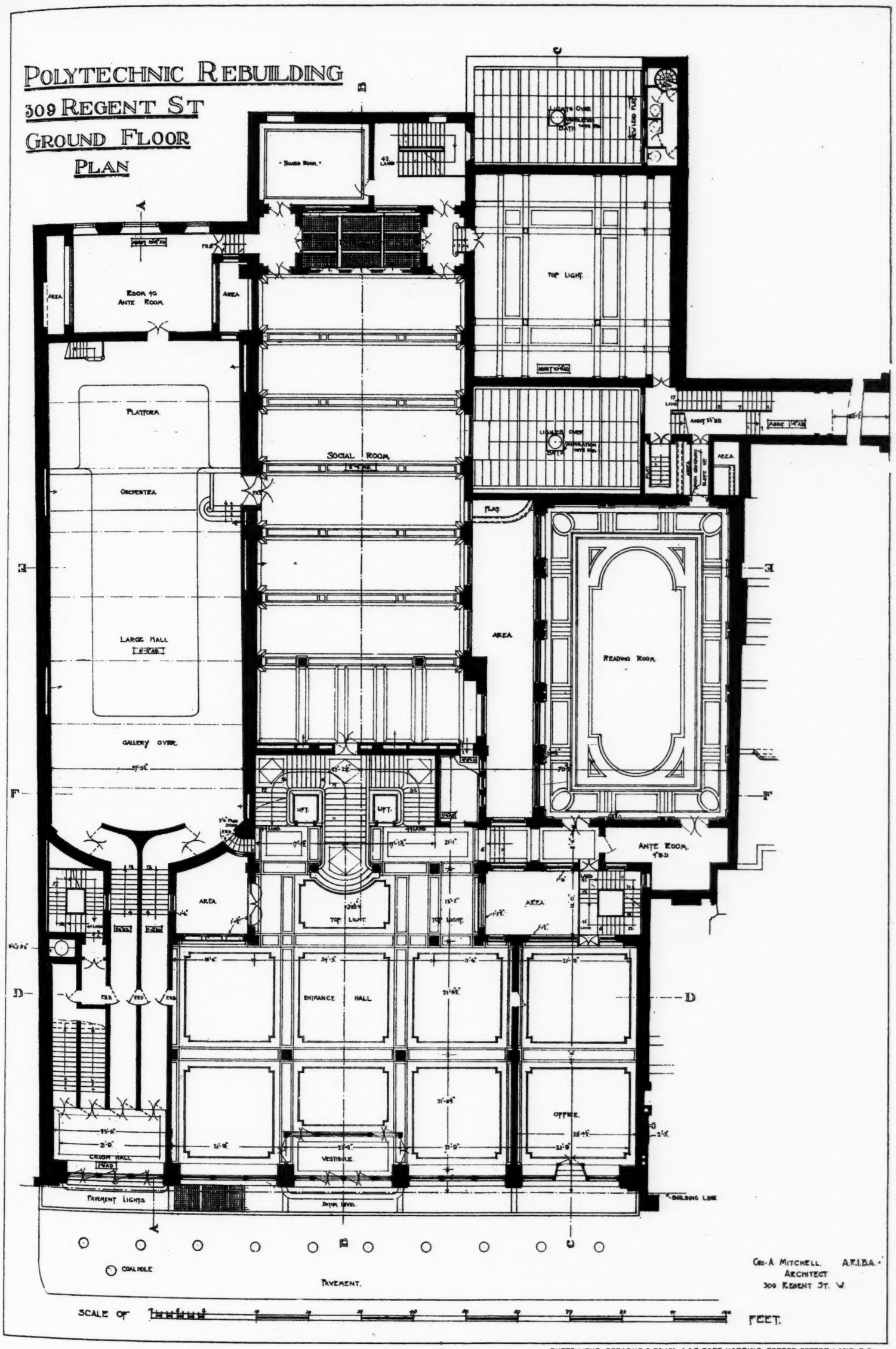

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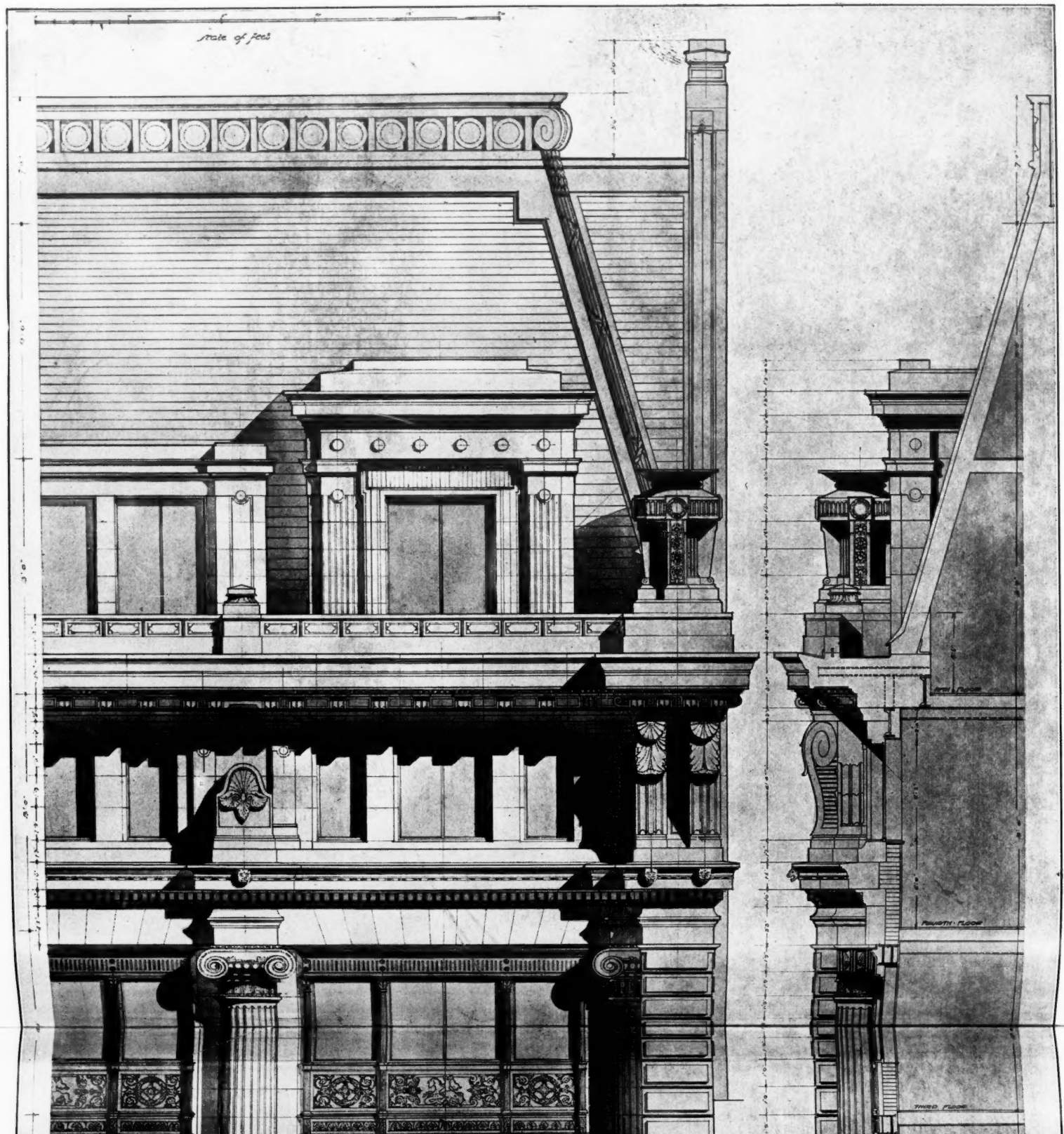
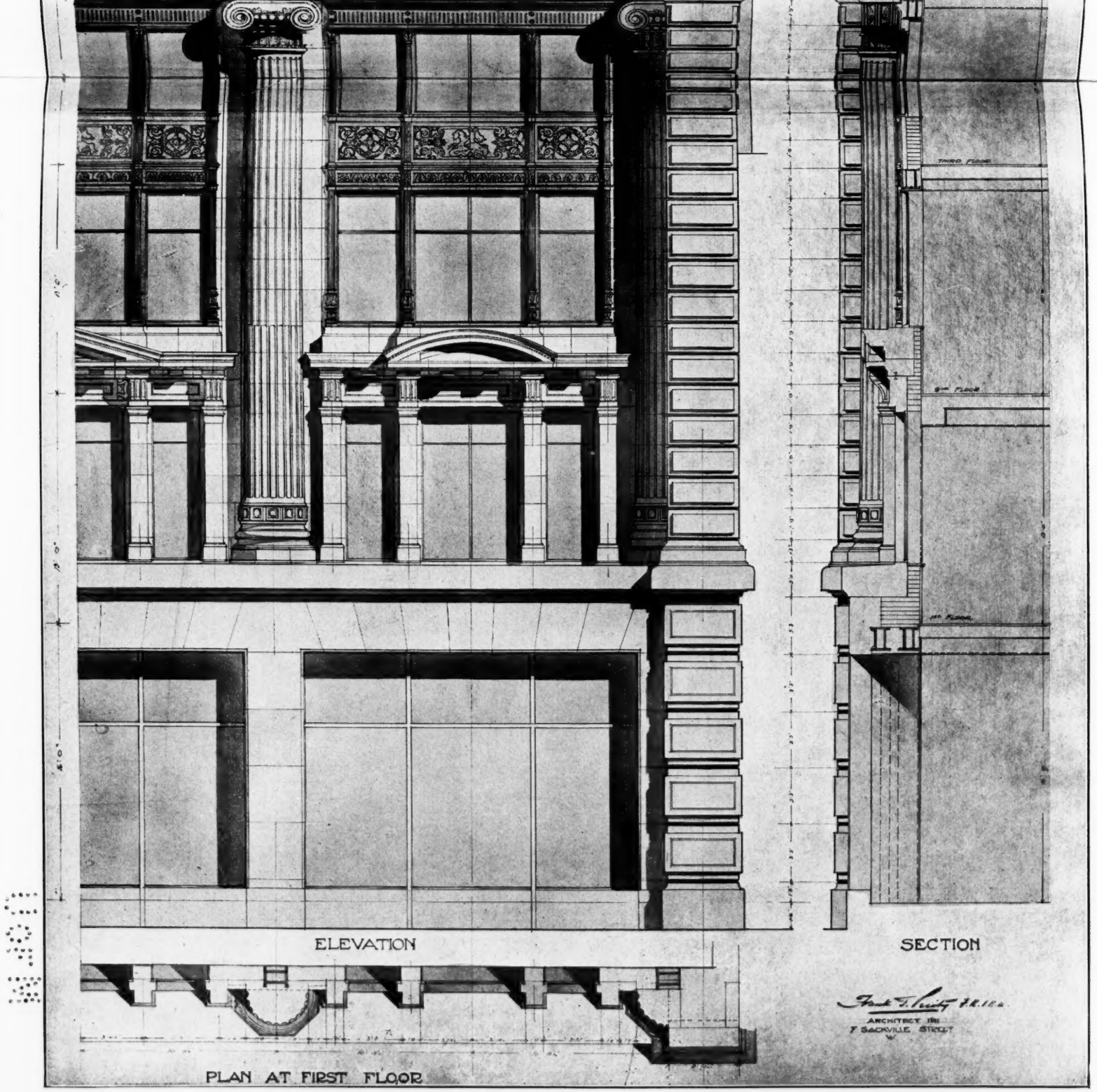

Scale of feet
FOURTH FLOOR
THIRD FLOOR



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